ML-190 Installation Manual

Phase 7 with F.S.S. – Gas – DSI / Steam

WARNING: For your safety the information in this manual must be followed to minimize the risk of fire or explosion and to prevent property damage, personal injury or death.

— Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

— WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Clear the room, building or area of all occupants.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

— Installation and service must be performed by a qualified installer, service agency or the gas supplier.

AVERTISSEMENT: Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

— Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

— QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareils.
- Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Évacuez la pièce, le bâtiment ou la zone.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

— L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

American Dryer Corp.®

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ADC Part No. 113354-8

Retain This Manual In A Safe Place For Future Reference

American Dryer Corporation products embody advanced concepts in engineering, design, and safety. If this product is properly maintained, it will provide many years of safe, efficient, and trouble free operation.

ONLY qualified technicians should service this equipment.

OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment or specified in the installation manual included with the dryer.

The following "**FOR YOUR SAFETY**" caution **must be** posted near the dryer in a prominent location.

FOR YOUR SAFETY	POUR VOTRE SÉCURITÉ
Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.	Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

We have tried to make this manual as complete as possible and hope you will find it useful. **ADC** reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models. The illustrations included in this manual may not depict your particular dryer **exactly**.

Important

For your convenience, log the following information:

DATE OF PURCHASE _____ **MODEL NO.** **ML-190**

RESELLER'S NAME _____

Serial Number(s) _____

_____

_____

Replacement parts can be obtained from your reseller or the **ADC** factory. When ordering replacement parts from the factory, you can FAX your order to **ADC** at +1 (508) 678-9447 or telephone your order directly to the **ADC** Parts Department at +1 (508) 678-9000. Please specify the dryer **model number** and **serial number** in addition to the **description** and **part number**, so that your order is processed accurately and promptly.

"IMPORTANT NOTE TO PURCHASER"

Information **must be** obtained from your local gas supplier on the instructions to be followed if the user smells gas. These instructions **must be** posted in a prominent location near the dryer.

⚠ WARNING

Proposition 65
Use of this product could expose you to substances from fuel combustion that contain chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

IMPORTANT

YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY OR THE STEAM SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS.**

"Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper operation."

«Attention: Au moment de l'entretien des commandes, étiquetez tous les fils avant de les débrancher. Des erreurs de câblage peuvent entraîner un fonctionnement inadéquat et dangereux.»

CAUTION

DRYERS SHOULD NEVER BE LEFT UNATTENDED WHILE IN OPERATION.

WARNING

CHILDREN SHOULD NOT BE ALLOWED TO PLAY ON OR NEAR THE DRYER(S).

CHILDREN SHOULD BE SUPERVISED IF NEAR DRYERS IN OPERATION.

FOR YOUR SAFETY

DO NOT DRY MOP HEADS IN THE DRYER.

DO NOT USE DRYER IN THE PRESENCE OF DRY CLEANING FUMES.

WARNING

UNDER NO CIRCUMSTANCES should the dryer door switches, the lint drawer switch, or the heat safety circuit ever be disabled.

WARNING

The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY OR FIRE COULD RESULT.

WARNING

DRYER *MUST NEVER BE* OPERATED WITHOUT THE LINT FILTER/SCREEN IN PLACE, EVEN IF AN EXTERNAL LINT COLLECTION SYSTEM IS USED.

IMPORTANT

PLEASE OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment and/or specified in the installation manual included with the dryer.

Dryer ***must not be*** installed or stored in an area where it **will be** exposed to water or weather.

The wiring diagram for the dryer is located in the front electrical control box area.

IMPORTANT

Dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

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SECTION I

SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: **The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY OR FIRE COULD RESULT.**

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. WHAT TO DO IF YOU SMELL GAS:

   a. **DO NOT** try to light any appliance.

   b. **DO NOT** touch any electrical switch.

   c. **DO NOT** use any phone in your building.

   d. Clear the room, building, or area of **ALL** occupants.

   e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

   f. If you **cannot** reach your gas supplier, call the fire department.

4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.

5. Dryer(s) **must be** exhausted to the outdoors.

6. Although **ADC** produces a very versatile dryer, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaner.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, or wax.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubberlike materials. Drying in a heated basket (tumbler) may damage plastics or rubber and may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the burner area, exhaust ductwork, and area around the back of the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust ductwork can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to electrically ground the dryer properly will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, the lint drawer switch, or the heat safety circuit ever be disabled.

WARNING: PERSONAL INJURY OR FIRE COULD RESULT SHOULD THE DRYER DOOR SWITCHES, THE LINT DRAWER SWITCH, OR THE HEAT SAFETY CIRCUIT EVER BE DISABLED.

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **READ AND FOLLOW ALL CAUTION AND DIRECTION LABELS ATTACHED TO THE DRYER.**

13. For safety, proper operation, and optimum performance, the dryer **must not be** operated with a load less than sixty-six percent (66%), 125 lb (56.69 kg) of its rated capacity.

WARNING: YOU MUST DISCONNECT AND LOCKOUT THE ELECTRIC SUPPLY AND THE GAS SUPPLY OR THE STEAM SUPPLY BEFORE ANY COVERS OR GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, OR TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS.**

IMPORTANT: Dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

SECTION II

SPECIFICATIONS/COMPONENT IDENTIFICATION

A. SPECIFICATIONS

MAXIMUM CAPACITY (DRY WEIGHT)		190 lb	**86.18 kg**
TUMBLER DIAMETER		55-5/8"	**141.29 cm**
TUMBLER DEPTH		43-1/2"	**110.49 cm**
TUMBLER VOLUME		61.20 cu ft	**1732.99 L**
TUMBLER/DRIVE MOTOR		3 hp	**2.24 kW**
BLOWER/FAN MOTOR		7-1/2 hp	**5.59 kW**
DOOR OPENING (DIAMETER)		31-3/8"	**79.71 cm**
DOOR SILL HEIGHT		36"	**91.44 cm**
WATER CONNECTION		3/4"-11.5 NH	
DRYERS PER 20'/40' CONTAINER		3 / 7	
DRYERS PER 48'/53' TRUCK		8 / 8	
Gas	VOLTAGE AVAILABLE	208-575v 3ø 3,4w 50/60 Hz	
	APPROX. NET WEIGHT	2,100 lb	**952.54 kg**
	APPROX. SHIPPING WEIGHT	2,166 lb	**982.48 kg**
	AIRFLOW	4,200 cfm	**118.93 cmm**
	HEAT INPUT	590,000 Btu/hr	**148,678 kcal/hr**
	EXHAUST CONNECTION (DIAMETER)	20"	**50.80 cm**
	COMPRESSED AIR CONNECTION	1/4" Quick Connection	
	COMPRESSED AIR VOLUME	4.25 cfh	**0.12 cmh**
	INLET PIPE CONNECTION	1-1/2" F.N.P.T.	
Electric	VOLTAGE AVAILABLE	N / A	
	APPROX. NET WEIGHT		
	APPROX. SHIPPING WEIGHT		
	AIRFLOW		
	EXHAUST CONNECTION (DIAMETER)		
	COMPRESSED AIR CONNECTION		
	COMPRESSED AIR VOLUME		
	OVEN SIZE		
	kW / Btu/hr / **kcal/hr**		
Steam	VOLTAGE AVAILABLE	208-575v 3ø 3,4w 50/60 Hz	
	APPROX. NET WEIGHT	2,349 lb	**1,065.49 kg**
	APPROX. SHIPPING WEIGHT	2,515 lb	**1,140.78 kg**
	AIRFLOW	4,400 cfm	**124.59 cmm**
	STEAM CONSUMPTION	725 lb/hr	**328.85 kg/hr**
	OPERATING STEAM PRESSURE	125 psi max	**8.62 bar**
	EXHAUST CONNECTION (DIAMETER)	20"	**50.80 cm**
	COMPRESSED AIR CONNECTION	1/4" Quick Connection	
	COMPRESSED AIR VOLUME	4.25 cfh	**0.12 cmh**
	BOILER HP (NORMAL LOAD)	19 Bhp	
	SUPPLY CONNECTION	1-1/2" F.N.P.T.	
	RETURN CONNECTION	1-1/2" F.N.P.T.	

Shaded areas are stated in metric equivalents 9/27/04

IMPORTANT: Gas dryers and steam dryers ***must be*** provided with a clean, dry, and regulated 80 psi ± 10 psi (5.51 bar ± 0.69 bar) air supply.

NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

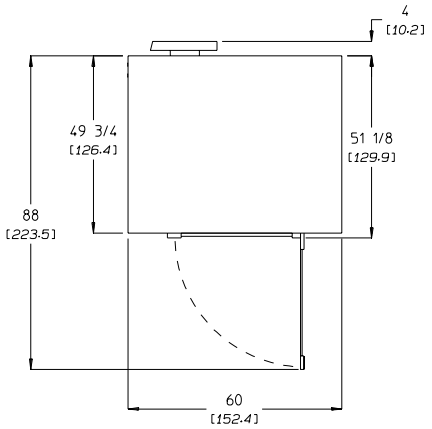
Specifications

DRYER NOTES:

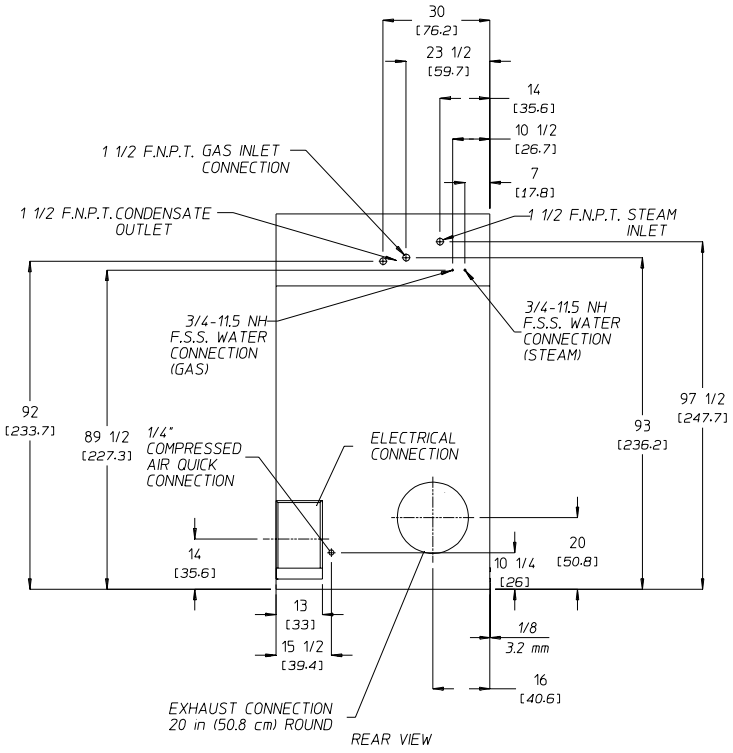
° DUCTWORK SIZE VARIES WITH INSTALLATION CONDITIONS.
° EXHAUST STATIC PRESSURE MUST BE NO LESS THAN 0 AND MUST NOT EXCEED 0.3" (0.74 MB) WATER COLUMN.

STEAM DRYER NOTES:

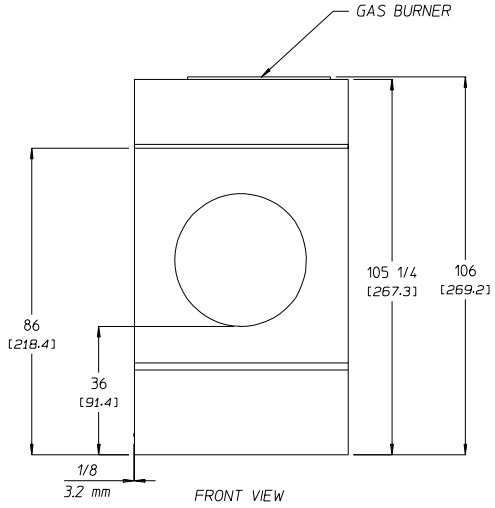
° SIZE OF PIPING TO DRYER VARIES WITH INSTALLATION CONDITIONS. CONTACT FACTORY FOR ASSISTANCE.
° STEAM DRYERS MUST BE PROVIDED WITH CLEAN, DRY, REGULATED 80 PSI ± 10 PSI (5.5 BAR ± 0.69 BAR) AIR SUPPLY.



PLAN VIEW



REAR VIEW



FRONT VIEW

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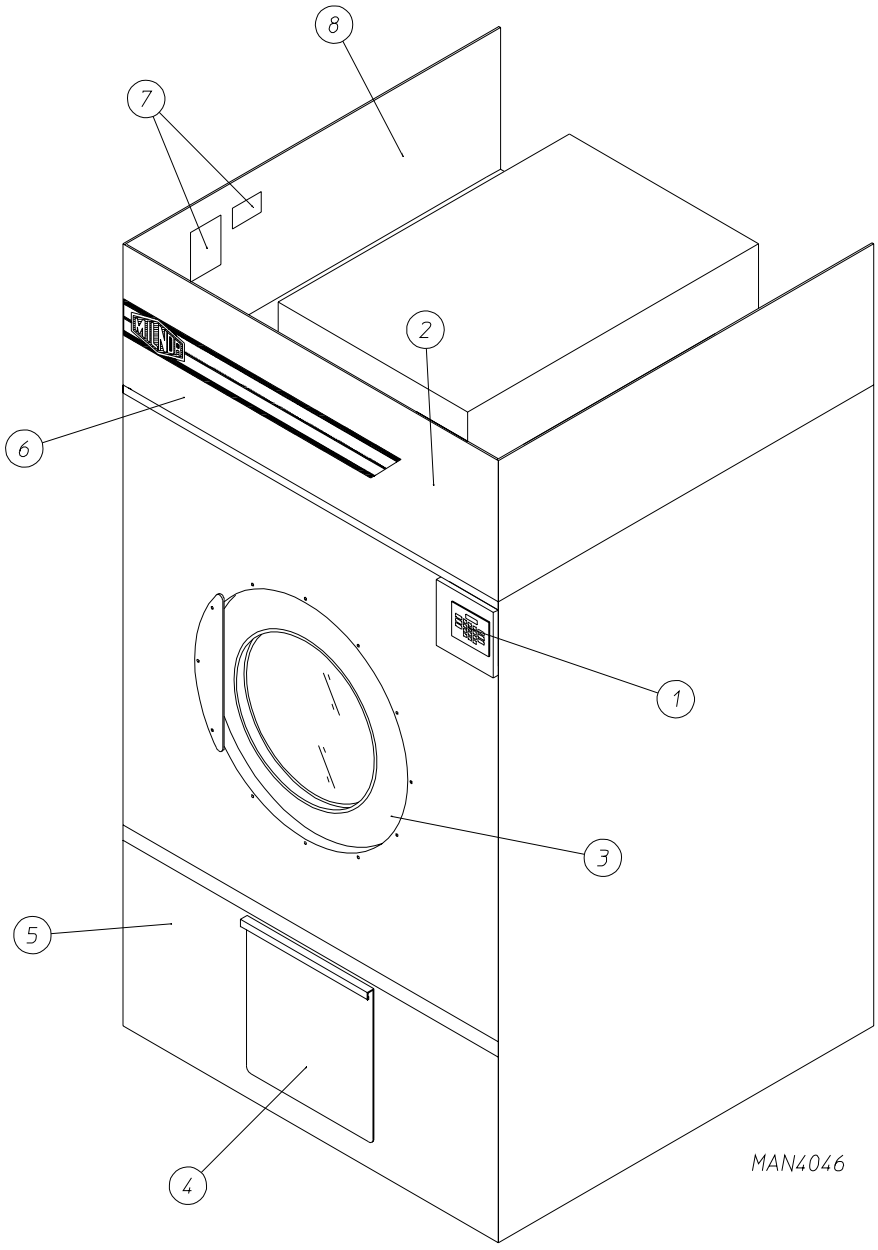
NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

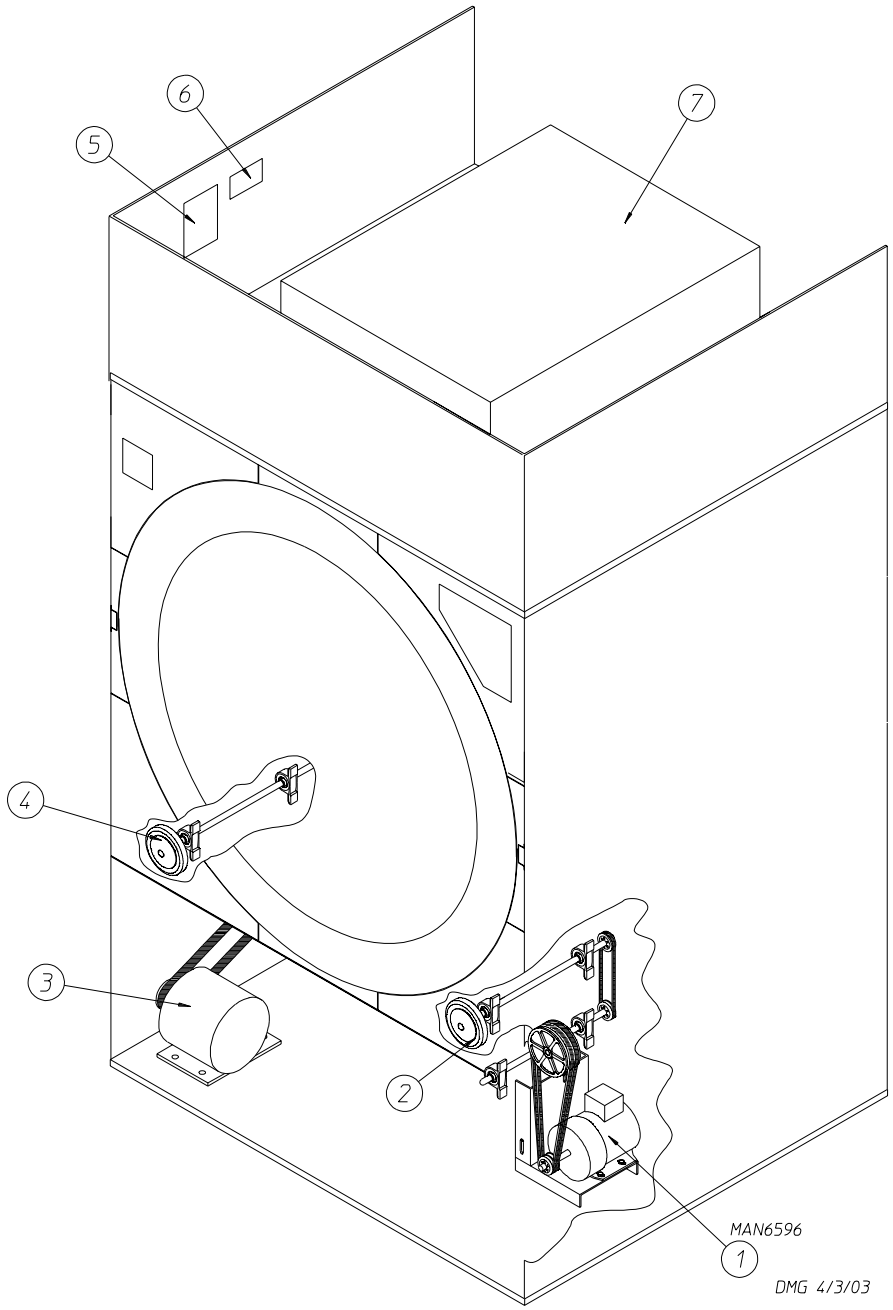
B. COMPONENT IDENTIFICATION

1. Dryer Front View



Illus. No.	Description
1	Microprocessor Control/Keyboard (touch pad) Panel Assembly (controls)
2	Control (top access) Door Assembly
3	Main Door Assembly
4	Lint Drawer
5	Lint Door
6	Wire Diagram (located behind control door)
7	Data Label and Installation Label
8	Top Console (module) Assembly

2. Dryer Front Internal View



Illus. No.	Description
1	Drive (basket [tumbler]) Motor
2	Drive Assembly
3	Blower Motor
4	Idler Assembly
5	Installation Label
6	Data Label
7	Heating Unit

SECTION III

INSTALLATION PROCEDURES

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable American National Standards: ANSI Z223.1-LATEST EDITION (National Fuel Gas Code) or ANSI/NFPA NO. 70-LATEST EDITION (National Electrical Code) or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. LOCATION REQUIREMENTS

Before installing the dryer, be sure the location conforms to local codes and ordinances. In the absence of such codes or ordinances the location **must conform** with the National Fuel Gas Code ANSI.Z223.1 LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing).

1. The dryer **must be** installed on a sound level floor capable of supporting its weight. Carpeting **must be** removed from the floor area that the dryer is to rest on.

IMPORTANT: "The dryer ***must be*** installed on noncombustible floors only."

2. The dryer **must not be** installed or stored in an area where it will be exposed to water and/or weather.

3. The dryer is for use in noncombustible locations.

4. Provisions for adequate air supply **must be** provided as noted in this manual (refer to **Fresh Air Supply Requirements** in **Section D**).

5. Clearance provisions **must be** made from combustible construction as noted in this manual (refer to **Dryer Enclosure Requirements** in **Section C**).

6. Provisions **must be** made for adequate clearances for servicing and for operation as noted in this manual (refer to **Dryer Enclosure Requirements** in **Section C**).

7. The dryer **must be** installed with a proper exhaust duct connection to the outside as noted in this manual (refer to **Exhaust Requirements** in **Section E**).

8. The dryer **must be** located in an area where correct exhaust venting can be achieved as noted in this manual (refer to **Exhaust Requirements** in **Section E**).

IMPORTANT: The dryer ***should be*** located where a minimum amount of exhaust duct **will be** necessary.

9. The dryer **must be** installed with adequate clearance for air openings into the combustion chamber.

CAUTION: This dryer produces combustible lint and ***must be*** exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

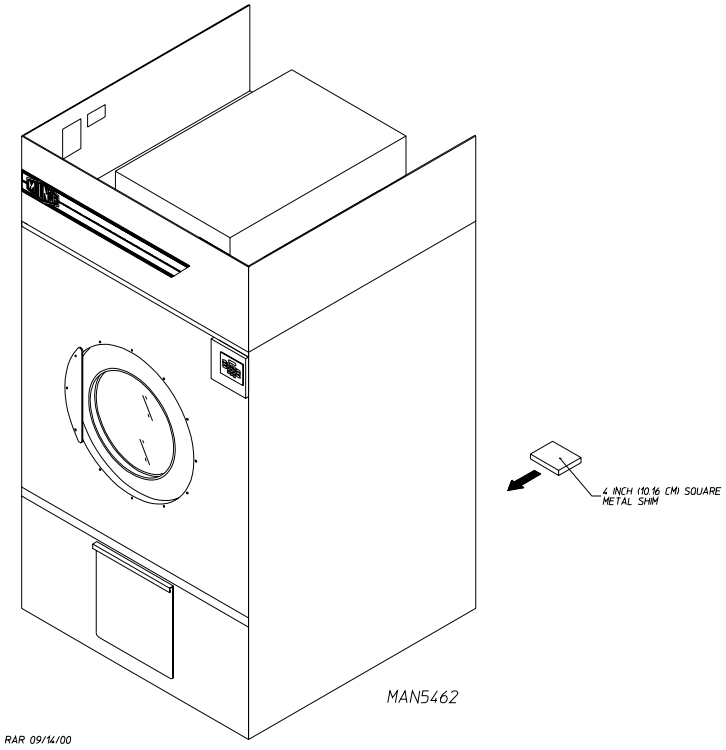
IMPORTANT: The dryer *must be* installed in a location/environment, which the ambient temperature remains between 40° F (4.44° C) and 130° F (54.44° C).

B. UNPACKING/SETTING UP

Remove protective shipping material (i.e. plastic wrap and/or optional shipping box) from dryer.

IMPORTANT: Dryer ***must be*** transported and handled in an upright position at **ALL** times.

The dryer can be moved to its final location while still attached to the skid or with the skid removed. To unskid the dryer, locate and remove the four (4) lag bolts securing the base of the dryer to the wooden skid. Two (2) are at the rear base and two (2) are located in the bottom of the lint chamber. To remove the two (2) lag bolts located in the lint chamber area, remove the lint drawer and the three (3) Phillips head screws securing the lint door in place.



1. Leveling Dryer

   a. To level the dryer, place 4-inch (10.16 cm) square metal shims (refer to the **illustration above**) or other suitable material under the base pads. It is suggested that the dryer be tilted slightly to the rear.

   b. The V-belts are disconnected from the basket (tumbler) drive motor for shipping. Reconnect V-belts before starting the dryer.

2. If more headroom is needed when moving the dryer into position, the top console (module) may be removed.

   To Remove Top Console (module):

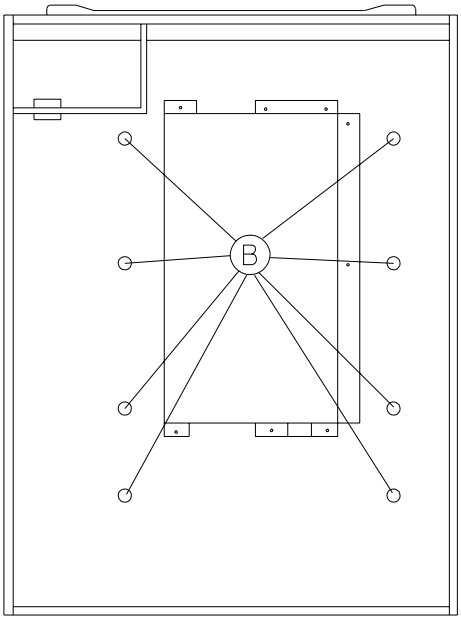
   1) Disconnect the ground wire (A in the **illustration below**) located at the rear upper left corner of the dryer.

   2) Remove the eight (8) sets of nuts and washers (B in the **illustration below**) holding the console (module) to the base.

   3) Disconnect the white plug connector (C in the **illustration below**) located on the top of the rear electric service/relay box (provides power to the heat circuit).

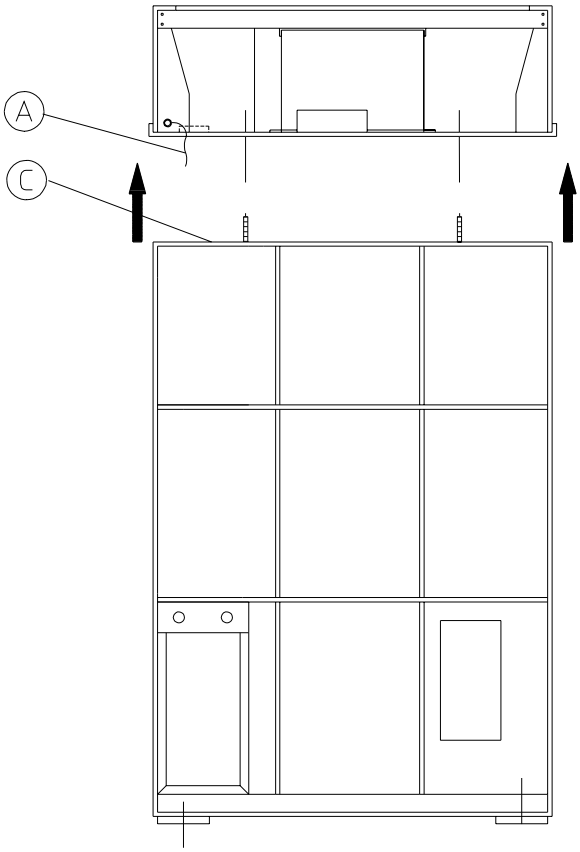
   4) Disconnect air connection from the 3-way micro valve.

   5) Lift the console (module) off of the dryer base.



TOP (CUT-AWAY) VIEW

MAN4050



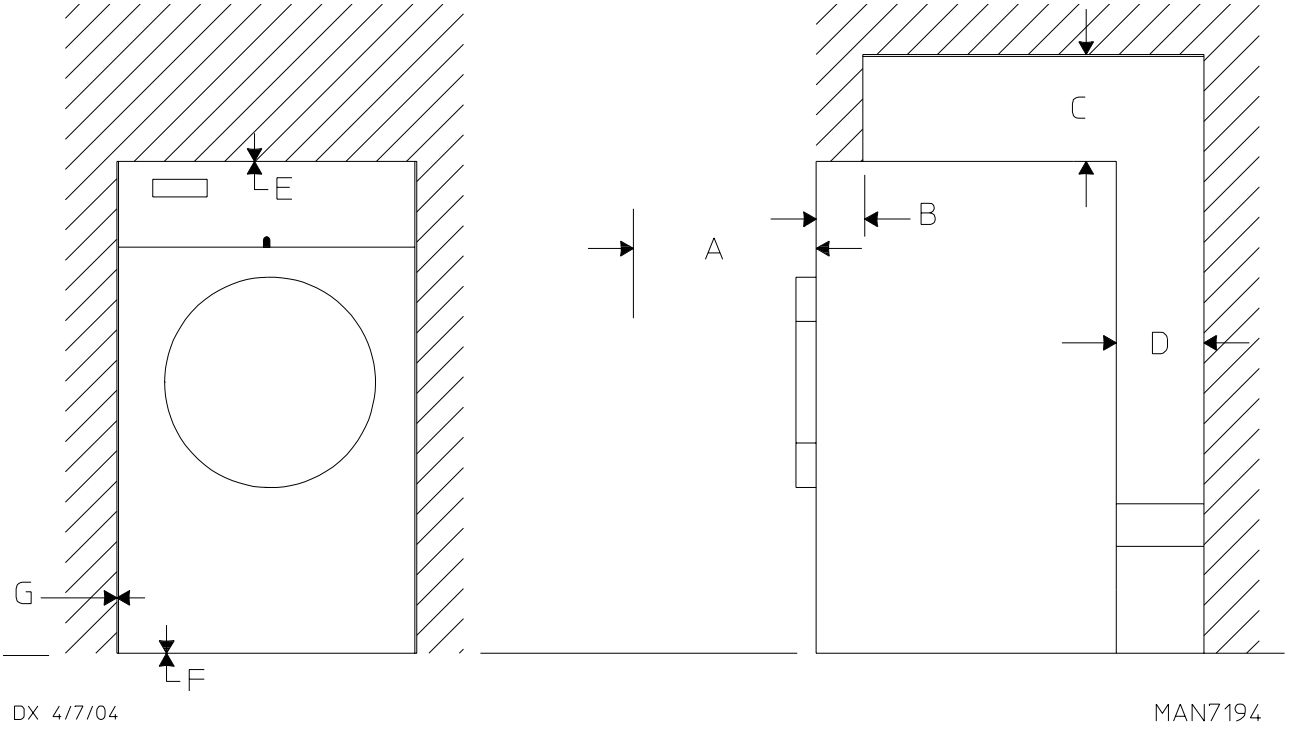
REAR VIEW

IMPORTANT: The dryer ***must be*** transported and handled in an upright position at **ALL** times.

C. DRYER ENCLOSURE REQUIREMENTS

Bulkheads and partitions **should be** made of noncombustible material.

NOTE: Allowances ***must be*** made for opening the control door.



A 38-inches (96.52 cm) for optimum opening of load door.

B The maximum thickness of the bulkhead for gas dryers is 4-inches (10.16 cm). For electric and steam dryers the maximum thickness of the bulkhead is 1-inch (2.54 cm) within 3-inches (7.62 cm) from the top of the control door.

C For gas and electric dryers a minimum overhead clearance of 12-inches (30.48 cm) is required, providing no sprinkler is located above the dryer. For steam dryers or if a sprinkler is located above the dryer, 18-inches (45.72 cm) is required.

D Dryer should be positioned 12-inches (30.48 cm) away from the nearest obstruction and 24-inches (60.96 cm) is recommended for ease of installation, maintenance, and service.

E 2-inch (5.08 cm) minimum is required for opening the control door.

F Flooring should be level or below dryer cabinet for ease of removing panels during maintenance.

G Dryers may be positioned sidewall to sidewall, however a 1/16" (1.5875 mm) minimum allowance must be made for the opening and closing of the control door, along with the removal of panels during maintenance.

D. FRESH AIR SUPPLY REQUIREMENTS

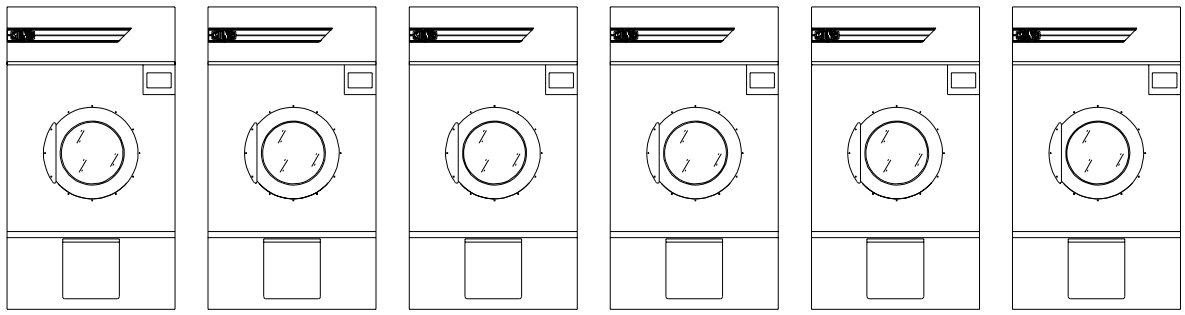
When the dryer is operating, it draws in room air, heats it, passes this air through the basket (tumbler), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems may result, as well as premature motor failure from overheating.

Air supply (make-up air) **must be** given careful consideration to ensure proper performance of each dryer. An unrestricted source of air is necessary for each dryer. As a general rule, an unrestricted air entrance from the outdoors (atmosphere) of a minimum of 4.5 square feet (0.41 square meters) is required for each dryer. (Based on 1 square inch per 1,000 Btu.)

To compensate for the use of registers or louvers used over the openings, this make-up air **must be** increased by approximately thirty-three percent (33%). Make-up air openings **should not be** located in an area directly near where exhaust vents exit the building. It is not necessary to have a separate make-up air opening for each dryer. Common make-up air openings are acceptable. However, they **must be** set up in such a manner that the make-up air is distributed equally to **ALL** the dryers. The dryer **must be** installed with provisions for adequate combustion and make-up air supply.

EXAMPLE: For a bank of six (6) dryers, two (2) unrestricted openings measuring 3 feet by 4.5 feet (0.91 meters by 1.37 meters) are acceptable.

Allowances **must be** made for remote or constricting passageways or where dryers are located at excessive altitudes or predominantly low pressure areas.



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TYPICAL INSTALLATION SHOWING MAKE-UP AIR OPENINGS

MAN5452

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning solvent fumes. Make-up air that is contaminated by dry cleaning solvent fumes will result in irreparable damage to the motors and other dryer components.

NOTE: Component failure due to dry cleaning solvent fumes will VOID THE WARRANTY.

E. EXHAUST REQUIREMENTS

1. General Exhaust Ductwork Information

Exhaust ductwork **should be** designed and installed by a qualified professional. Improperly sized ductwork will create excessive back pressure which results in slow drying, increased use of energy, overheating of the dryer, and shutdown of the burner by the airflow (sail) switches, burner hi-limits, or basket (tumbler) hi-heat thermostats. The dryer **must be** installed with a proper exhaust duct connection to the outside.

CAUTION: This dryer produces combustible lint and ***must be*** exhausted to the outdoors.

CAUTION: IMPROPERLY SIZED OR INSTALLED EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.

NOTE: When a dryer is exhausted separately, **it is recommended** that a back draft damper be installed.

NOTE: When dryers are exhausted into a multiple (common) exhaust line, each dryer ***must be*** supplied with a back draft damper.

The ductwork **should be** laid out in such a way that the ductwork travels as directly as possible to the outdoors with as few turns as possible. Single or independent dryer venting is recommended.

NOTE: Make-up air openings ***should not be*** located in an area directly near where the exhaust vents exit the building. 159 inches per 1,000 Btu.

The shape of the ductwork is not so critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90º turns be avoided; use 30º and/or 45º bends/angles instead. The radius of the elbows **should preferably be** 1-1/2 times the diameter of the duct.

ALL ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

IMPORTANT: Exhaust back pressure measured by a manometer in the exhaust duct ***must be*** no less than 0 and ***must not exceed*** 0.3 inches (0.74 mb) of water column (W.C.).

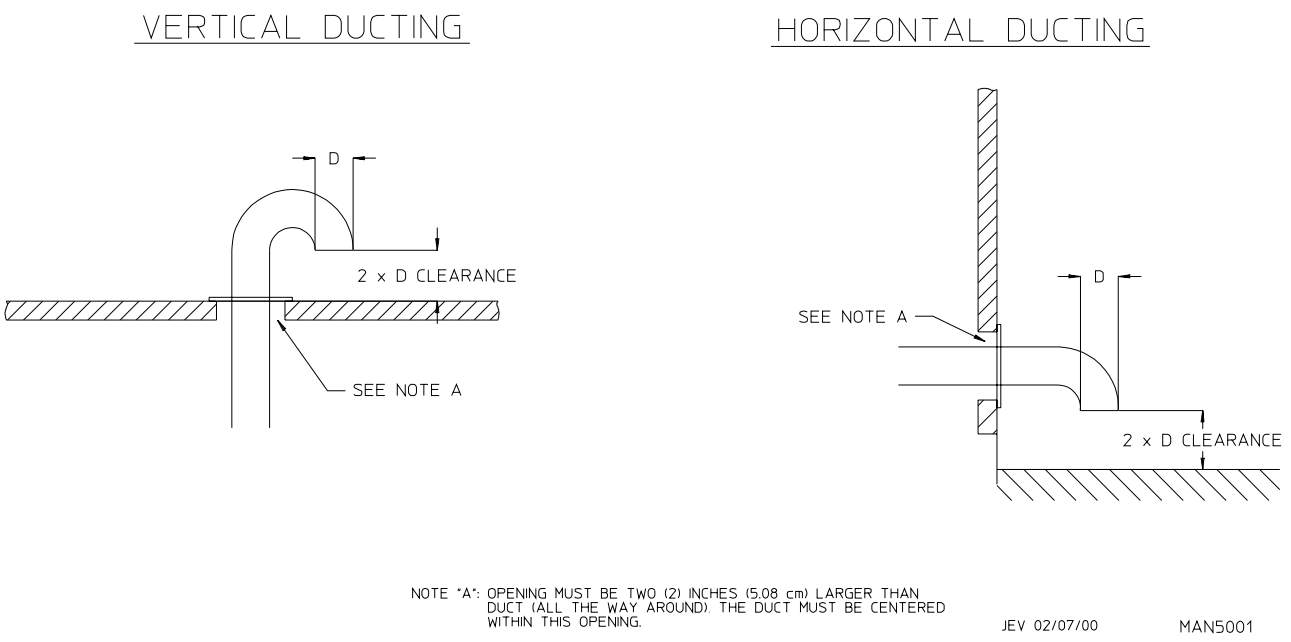
NOTE: When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening ***must be*** 2-inches (5.08 cm) larger than the duct (all the way around). The duct ***must be*** centered within this opening.

IMPORTANT: **It is recommended** that exhaust or booster fans not be used in the exhaust ductwork system.

Outside Ductwork Protection

To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward **should be** installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it **should be** protected from the weather by using a 180° turn to point the opening downward. In either case, allow at least twice the diameter of the duct between the duct opening and the nearest obstruction.

IMPORTANT: ***DO NOT*** use screens, louvers, or caps on the outside opening of the exhaust ductwork.


VERTICAL DUCTING
D
2 x D CLEARANCE
SEE NOTE A
HORIZONTAL DUCTING
SEE NOTE A
D
2 x D CLEARANCE
NOTE "A": OPENING MUST BE TWO (2) INCHES (5.08 cm) LARGER THAN DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.
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2. Single Dryer Venting

IMPORTANT: For vertical venting the minimum duct size is 24-inches (60.96 cm) for a round duct and 20-inches (50.8 cm) for round horizontal venting. **THE DUCT SIZE *MUST NOT BE* REDUCED ANYWHERE DOWNSTREAM OF THE DRYER.**

IMPORTANT: Exhaust back pressure measured by a manometer at each basket (tumbler) exhaust duct area ***must be*** no less than 0 and ***must not exceed*** 0.3 inches (0.74 mb) of water column (W.C.).

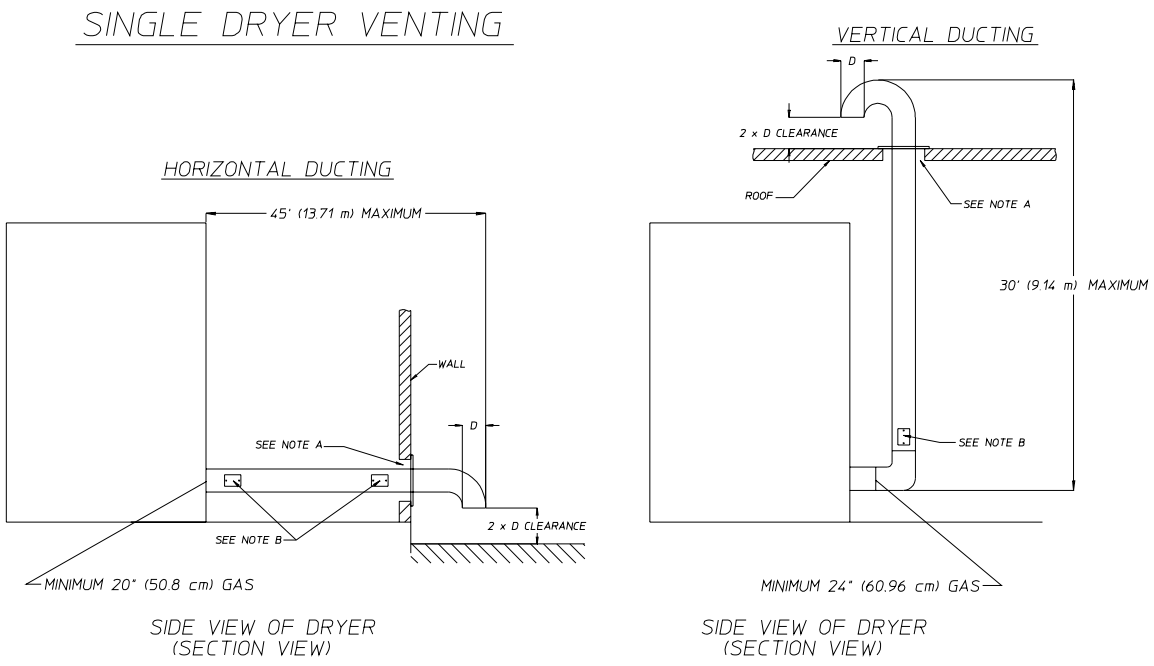
NOTE: As per the National Fuel Gas Code, "Exhaust ducts for Type 2 clothes dryers shall be constructed of sheet metal or other noncombustible material. Such ducts shall be equivalent in strength and corrosion resistance to ducts made of galvanized sheet steel not less than 26 gauge (0.0195 inches [0.5 mm]) thick."

Horizontal Venting:

When single dryer horizontal venting is used, the length of ductwork from the dryer to the outside exhaust outlet **must not exceed** 45 feet (13.71 meters). The minimum diameter of this ductwork **must be** at least 20-inches (50.8 cm). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90° turns be avoided; use 30° and/or 45° angles instead. The radius of the elbows **should preferably be** 1-1/2 times the diameter of the duct. No more than one (1) elbow **must be** used including the elbow used for outside protection from the weather. If more than one (1) elbow is needed, the cross-sectional area **must be** increased. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

Vertical Venting:

When single dryer vertical venting is used, the length of ductwork from the dryer to the outside exhaust outlet **must not exceed** 30 feet (9.14 meters). The minimum diameter of this ductwork **must be** at least 24-inches (60.96 cm) even though the dryer exhaust duct is only 20-inches (50.8 cm). The shape of the ductwork is not critical as long as the minimum cross-sectional area is provided. It is suggested that the use of 90º turns be avoided; use 30º and/or 45º angles instead. The radius of the elbows **should preferably be** 1-1/2 times the diameter of the duct. No more than three (3) elbows **must be** used, including the two (2) elbows (gooseneck) used for outside protection from the weather. If more than three (3) elbows are needed, the cross-sectional area **must be** increased. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.



IMPORTANT: For extended ductwork runs, the cross section area of the ductwork can only be increased to an extent. When the ductwork approaches the maximum limits as noted in this manual, a professional heating, ventilating, and air-conditioning (HVAC) firm ***should be*** consulted for proper venting information.

NOTE: When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening ***must be*** 2-inches (5.08 cm) larger than the duct (all the way around). The duct ***must be*** centered within this opening.

Outside Ductwork Protection

To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward **should be** installed where the exhaust exits the building. If the ductwork travels vertically up through the roof, it **should be** protected from the weather by using a 180° turn to point the opening downward. In either case, allow at least twice the diameter of the duct between the duct opening and the nearest obstruction.

IMPORTANT: ***DO NOT*** use screens, louvers, or caps on the outside opening of the exhaust ductwork.

3. Multiple Dryer (Common) Venting

If it is not feasible to provide separate exhaust ducts for each dryer, ducts from individual dryers may be channeled into a "common main duct." The individual ducts should enter the bottom or side of the main duct at an angle not more than 45° in the direction of the flow and **should be** spaced at least 60-3/16" (152.87 cm) apart. The main duct **should be** tapered, with the diameter increasing before each individual 20-inch (50.8 cm) duct is added.

Where common venting is used, the length of the horizontal ductwork run, from the last dryer (nearest to where the ductwork exits the building) in the common duct to the outside exhaust outlet, **must not exceed** 20 feet (6.1 meters).

The minimum duct size from each dryer into the common duct **must be** 20-inches (50.8 cm) in diameter, and must not have more than one (1) 45° elbow (connection into the common duct) and one (1) 90° elbow (dryer connection). Total run of the duct between the dryer and the common duct connection **must not exceed** 15 feet (4.57 meters).

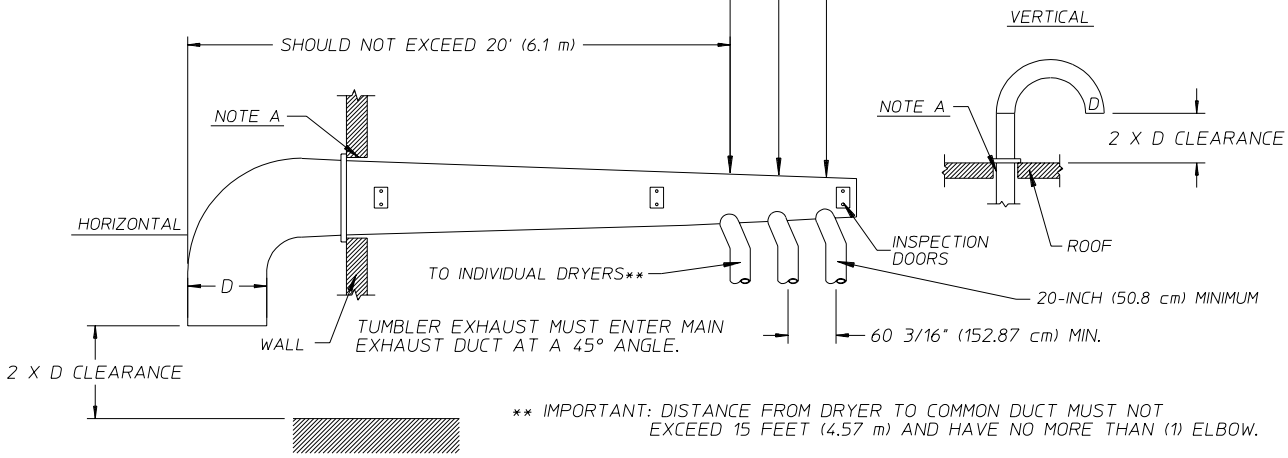
IMPORTANT: This dryer **is not** provided with a back draft damper. When exhausted into a multiple (common) exhaust line, a back draft damper ***must be*** installed at each dryer duct.

IMPORTANT: No more than three (3) dryers ***should be*** connected to one (1) main common duct.

The main duct may be any shape or cross-sectional area, as long as the minimum cross section area is provided. The **illustration below** shows the minimum cross section area for multiple dryer round or square venting. These figures **must be** increased 10 square inches (64.52 square centimeters) when rectangular main ducting is used, and the ratio of duct width to depth **should not be** greater than 3-1/2 to 1. These figures **must be** increased in proportion if the main duct run to the last dryer to where it exhausts to the outdoors is unusually long (over 20 feet [6.1 meters]) or has numerous elbows (more than one [1]) in it. In calculating ductwork size, the cross-sectional area of a square or rectangular duct **must be** increased twenty percent (20%) for each additional 20 feet (6.1 meters). The diameter of a round exhaust **must be** increased ten percent (10%) for each additional 20 feet (6.1 meters). Each 90° elbow is equivalent to an additional 74 feet (22.55 meters) and each 45° elbow is equivalent to an additional 37 feet (11.27 meters).

MULTIPLE DRYER VENTING WITH 20-INCHES (50.8 CM) DIAMETER EXHAUST CONNECTIONS AT COMMON DUCT

NO. OF DRYERS		3	2	1
MINIMUM CROSS SECTION AREA	SQ. IN.	707	531	315
	SQ. CM.	4561	3426	2032
MINIMUM ROUND DUCT DIAMETER	IN	30	26	20
	CM	76	66	51


VERTICAL
SHOULD NOT EXCEED 20' (6.1 m)
NOTE A
NOTE A
D
2 X D CLEARANCE
HORIZONTAL
INSPECTION DOORS
ROOF
TO INDIVIDUAL DRYERS**
D
20-INCH (50.8 cm) MINIMUM
TUMBLER EXHAUST MUST ENTER MAIN EXHAUST DUCT AT A 45° ANGLE.
WALL
60 3/16" (152.87 cm) MIN.
2 X D CLEARANCE
** IMPORTANT: DISTANCE FROM DRYER TO COMMON DUCT MUST NOT EXCEED 15 FEET (4.57 m) AND HAVE NO MORE THAN (1) ELBOW.

IMPORTANT: NO MORE THAN 3 DRYERS CAN BE CONNECTED TO ONE COMMON DUCT (VENT).

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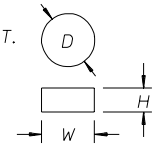
FORMULAS TO CALCULATE DUCTING CROSS SECTIONAL AREA

CROSS SECTIONAL AREA OF A ROUND DUCT = .785 (19.939 mm) x D^2 WHERE D = DIAMETER OF THE DUCT.

CROSS SECTIONAL AREA OF A RECTANGULAR DUCT = W x H WHERE W = WIDTH AND H = HEIGHT.



NOTE A: OPENING MUST BE 2-INCHES (5.08 cm) LARGER THAN THE DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

IMPORTANT: For extended ductwork runs, the cross section area of the ductwork can only be increased to an extent. Maximum proportional ductwork runs **cannot** exceed 20 feet (6.1 meters) more than the original limitations of 20 feet (6.1 meters) with two (2) elbows. When the ductwork approaches the maximum limits as noted in this manual, a professional heating, ventilating, and air-conditioning (HVAC) firm ***should be*** consulted for proper venting information.

IMPORTANT: Exhaust back pressure measured by a manometer in the exhaust duct ***must be*** no less than 0 and ***must not exceed*** 0.3 inches (0.74 mb) of water column (W.C.).

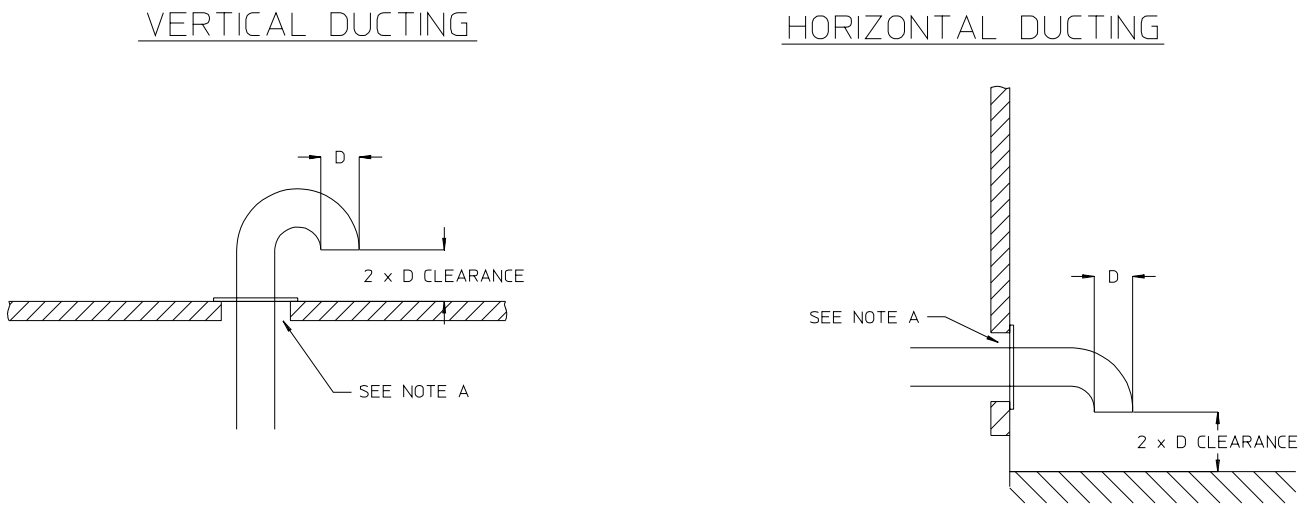
The ductwork **should be** smooth inside with no projections from sheet metal screws or other obstructions, which will collect lint. When adding ducts, the duct to be added should overlap the duct to which it is to be connected. **ALL** ductwork joints **must be** taped to prevent moisture and lint from escaping into the building. Inspection doors **should be** installed at strategic points in the exhaust ductwork for periodic inspection and cleaning of lint from the ductwork.

NOTE: When the exhaust ductwork passes through a wall, ceiling, or roof made of combustible materials, the opening ***must be*** 2-inches (5.08 cm) larger than the duct (all the way around). The duct ***must be*** centered within this duct.

Outside Ductwork Protection

To protect the outside end of the horizontal ductwork from the weather, a 90° elbow bent downward **should be** installed where the exhaust exits the building. If the exhaust ductwork travels vertically up through the roof, it **should be** protected from the weather by using a 180° turn to point the opening downward. In either case, allow at least twice the diameter of the duct between the duct opening and the nearest obstruction.

IMPORTANT: ***DO NOT*** use screens, louvers, or caps on the outside opening of the exhaust ductwork.



NOTE "A": OPENING MUST BE TWO (2) INCHES (5.08 cm) LARGER THAN DUCT (ALL THE WAY AROUND). THE DUCT MUST BE CENTERED WITHIN THIS OPENING.

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F. ELECTRICAL INFORMATION

1. Electrical Requirements

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to ensure that the electrical installation is adequate and conforms to local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, materials, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances, and/or the requirements stipulated in this manual can result in personal injury or component failure.

NOTE: Component failure due to improper installation will VOID THE WARRANTY.

Each dryer **should be** connected to an independently protected branch circuit. The dryer **must be** connected with copper wire only. ***DO NOT use aluminum wire; it could create a fire hazard***. The copper conductor wire/cable **must be** of proper ampacity and insulation in accordance with electric codes for making **ALL** service connections.

NOTE: The use of aluminum wire will VOID THE WARRANTY.

NOTE: Wiring diagrams are affixed to the inside at the top front control door and the rear upper back guard/panel or the left side panel area behind the control door.

2. Electrical Service Specifications

GAS AND STEAM

ELECTRICAL SERVICE SPECIFICATIONS (PER DRYER)

IMPORTANT: 208 VAC AND 230/240 VAC ARE NOT THE SAME. When ordering, specify exact voltage.

NOTES:
A. When fuses are used they must be dual element, time delay, current limiting, class RK1 or RK5 ONLY. Calculate/determine correct fuse value, by applying either local and/or National Electrical Codes to listed appliance amp draw data.
B. Circuit breakers are thermal-magnetic (industrial) motor curve type ONLY. For others, calculate/verify correct breaker size according to appliance amp draw rating and type of breaker used.
C. Circuit breakers for 3-phase (3Ø) dryers must be 3-pole type.

SERVICE VOLTAGE	PHASE	WIRE SERVICE	APPROX. AMP DRAW		MINIMUM WIRE SIZE	FUSING	CIRCUIT BREAKER
			60 Hz	50 Hz		Dual Element Time Delay	
208	3ø	3	36.8	–	*	60	60
230	3ø	3	–	29.7	*	50	50
240	3ø	3	34.9	–	*	60	60
380	3ø	4**	–	17.3	*	25	25
400	3ø	4**	–	16.7	*	25	25
416	3ø	4**	–	16.1	*	25	25
460/480	3ø	3	18.4	–	*	30	30
575	3ø	3	13.5	–	*	20	20

* AWG Stranded Wire Type – size wire as per National Electrical Code or local codes. 9/5/08
** 3 Wire is available.

IMPORTANT: The dryer ***must be*** connected to the electric supply shown on the data label. In the case of 208 VAC or 240 VAC, the supply voltage must match the electric service specifications of the data label **exactly**.

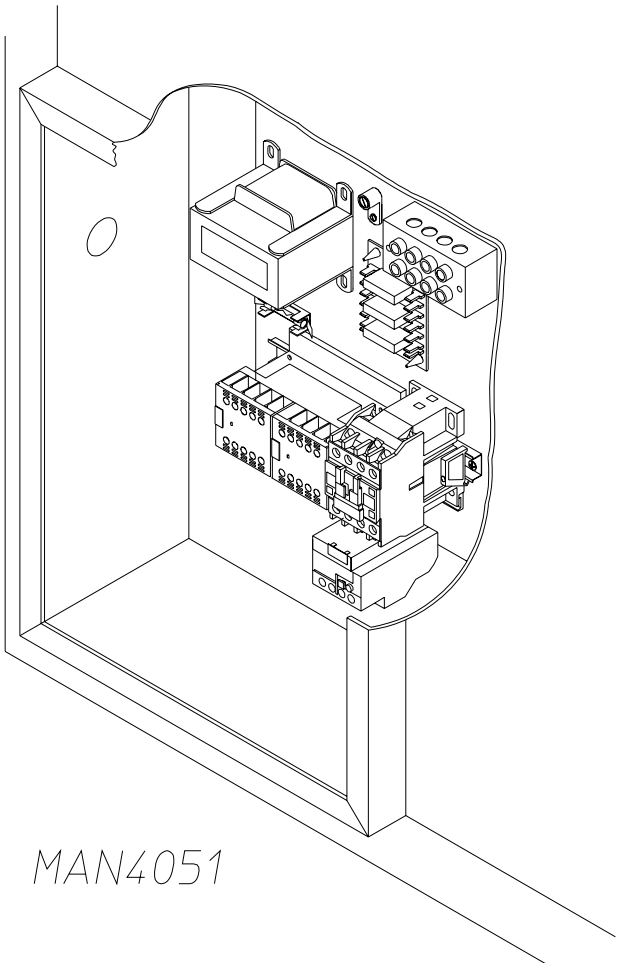
WARNING: **208 VAC AND 240 VAC ARE NOT THE SAME.** Any damage done to dryer components due to improper voltage connections will automatically VOID THE WARRANTY.

NOTE: **ADC** reserves the right to make changes in specifications at any time without notice or obligation.

3. Electrical Connections

NOTE: A wire diagram is included with each dryer and is affixed to the back side of the top control (access) door.

The only electrical input connections to the dryer are the 3-phase (3ø) power leads (L1, L2, and L3), GROUND, and in the case of 4 wire service, the NEUTRAL. These electrical connections are made at the terminal block located in the service/relay box at the rear, upper left hand corner of the dryer. To gain access into this service box, the service cover **must be** removed.



The "LINE POWER" and the "GROUND" connections to the dryer **must be** made through the knockout hole at the top of the electric service/relay box. A strain relief **must be** used where the line power ground wires go into the electric service/relay box.

Providing local codes permit, power connections to the dryer can be made by use of a flexible underwriters laboratory list cord/pigtail (wire **must conform** to ratings of the dryer), or the dryer can be hard wired directly to the service breaker. In **ALL** cases, a strain relief **must be** used where the wire(s) enter the dryer's electrical service (relay) box.

NOTE: A CIRCUIT SERVICING EACH DRYER *MUST BE* PROVIDED.

4. Grounding

A ground (earth) connection **must be** provided and installed in accordance with state and local codes. In the absence of these codes, grounding **must conform** to applicable requirements of the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canada Standards: Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION. The ground connection may be to a proven earth ground at the location service panel.

NOTE: A grounding connection (terminal lug) is provided in the dryer's electrical service/relay box at the rear, upper left hand corner of the dryer.

For added personal safety, when possible, it is suggested that a separate ground wire (sized per local codes) be connected from the ground connection of the dryer to a grounded cold water pipe. ***DO NOT ground to a gas pipe or hot water pipe***. The grounded cold water pipe must have metal to metal connection **ALL** the way to the electrical ground. If there are any nonmetallic interruptions, such as a meter, pump, plastic, rubber, or other insulating connectors, they **must be** jumped out with no. 4 copper wire and securely clamped to bare metal at both ends.

IMPORTANT: For personal safety and proper operation, the dryer ***must be*** grounded. For proper operation of the microprocessor controller (computer), an earth (zero) ground is required.

NOTE: Grounding via metallic electrical conduit (pipe) **is not recommended**.

G. GAS INFORMATION

It is your responsibility to have **ALL** plumbing connections made by a qualified professional to ensure that the gas plumbing installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** plumbing connections, materials, and workmanship **must conform** to the applicable requirements of the National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances, and/or the requirements stipulated in this manual, can result in personal injury and improper operation of the dryer.

The dryer and its individual shutoff valves **must be** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa). The dryer **must be** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

IMPORTANT: Failure to isolate or disconnect dryer from supply as noted can cause irreparable damage to the gas valve, which will VOID THE WARRANTY.

WARNING: FIRE OR EXPLOSION COULD RESULT DUE TO FAILURE OF ISOLATING OR DISCONNECTING THE GAS SUPPLY AS NOTED.

1. Gas Supply

   The gas dryer installation **must meet** the American National Standard...National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Installation Codes CAN/CGA-B149.1 M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION, as well as local codes and ordinances and **must be** done by a qualified professional.

NOTE: Undersized gas piping will result in ignition problems, slow drying, increased use of energy, and can create a safety hazard.

The dryer **must be** connected to the type of heat/gas indicated on the dryer data label. If this information does not agree with the type of gas available, ***DO NOT operate the dryer***. Contact the reseller who sold the dryer or contact the **ADC** factory.

IMPORTANT: Any burner changes or conversions ***must be*** made by a qualified professional.

The input ratings shown on the dryer's data label are for elevations up to 2,000 feet (609.6 meters), unless elevation requirements of over 2,000 feet (609.6 meters) were specified at the time the dryer order was placed with the factory. The adjustment or conversion of dryers in the field for elevations over 2,000 feet (609.6 meters) is made by changing each burner orifice. If this conversion is necessary, contact the reseller who sold the dryer or contact the **ADC** factory.

IMPORTANT: THIS GAS DRYER **IS NOT** PROVIDED WITH AN INTERNAL GAS SUPPLY SHUT OFF AND AN EXTERNAL SHUT OFF ***MUST BE*** PROVIDED.

2. Technical Data

a. Gas Specifications

	TYPE OF GAS			
	NATURAL		LIQUID PROPANE	
Manifold Pressure*	3.5 inches W.C.	**8.7 mb**	10.5 inches W.C.	**26.1 mb**
In-Line Pressure	6.0 - 12.0 inches W.C.	**14.92 - 29.9 mb**	11.0 inches W.C.	**27.4 mb**

Shaded areas are stated in metric equivalents

* Measured at the gas valve pressure tap when the gas valve is on.

b. Gas Connections:

Inlet connection ---------- 1-1/2" N.P.T.
Inlet supply size ---------- 1-1/2" Pipe (minimum)
Btu/hr input (per dryer) ---- 590,000 (148,680 kcal/hr)

1) Natural Gas

Regulation is controlled by the dryer's gas valve's internal regulator. Incoming supply pressure **must be** consistent between a minimum of 6.0 inches (14.92 mb) and a maximum of 12.0 inches (29.9 mb) water column (W.C.) pressure.

2) Liquid Propane (L.P.) Gas

Dryers made for use with L.P. gas have the gas valve's internal pressure regulator blocked open so that the gas pressure **must be** regulated upstream of the dryer. The pressure measured at each gas valve pressure tap **must be** a consistent 10.5 inches (26.1 mb) water column. There is no regulator or regulation provided in an L.P. dryer. The water column pressure **must be** regulated at the source (L.P. tank) or an external regulator **must be** added to each dryer.

		TYPE OF GAS						Liquid Propane Conversion Kit Part Number
Btu/hr Rating	**kcal/hr Rating**	Natural			Liquid Propane			
		Qty.	D.M.S.*	Part No.	Qty.	D.M.S.*	Part No.	
590,000	**148,680**	4	#1	140840	4	#28	140821	882222

Shaded area is stated in metric equivalent

* Drill Measurement Size (D.M.S.) equivalents are as follows:

Natural Gas ..... #1 = 0.2280" (5.7912 mm).
L.P. Gas ..... #28 = 0.1405" (3.5687 mm).

3. Piping/Connections

ALL components/materials **must conform** to National Fuel Gas Code Specifications ANSI Z223.1-LATEST EDITION, or in Canada, CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (Liquid Propane [L.P.] Gas) or LATEST EDITION (for General Installation and Gas Plumbing), as well as local codes and ordinances and **must be** done by a qualified professional. It is important that gas pressure regulators meet applicable pressure requirements, and that gas meters be rated for the total amount of **ALL** the appliance Btu being supplied.

The dryer is provided with a 1-1/2" N.P.T. inlet pipe connection extending out the back area of the burner box. The minimum pipe size (supply line) to the dryer is 1-1/2" N.P.T. For ease in servicing, the gas supply line of each dryer must have its own shutoff valve.

The size of the main gas supply line (header) will vary depending on the distance this line travels from the gas meter or, in the case of L.P. gas, the supply tank, other gas-operated appliances on the same line, etc. Specific information regarding supply line size **should be** determined by the gas supplier.

NOTE: Undersized gas supply piping can create a low or inconsistent pressure, which will result in erratic operation of the burner ignition system.

Consistent gas pressure is essential at **ALL** gas connections. It is recommended that a 1-1/2" (3.81 cm) pipe gas loop be installed in the supply line servicing a bank of dryers. An in-line pressure regulator **must be** installed in the gas supply line (header) if the (natural) gas pressure exceeds 12.0 inches (29.9 mb) of water column (W.C.) pressure.

NOTE: A consistent water column test pressure of 3.5 inches (8.7 mb) for natural gas and 10.5 inches (26.1 mb) for L.P. dryers is required at the gas valve pressure tap of each dryer for proper and safe operation.

An 1/8" N.P.T. plugged tap, accessible for a test gauge connection, **must be** installed in the main gas supply line immediately upstream of each dryer.

IMPORTANT: Pipe joint compounds that resist the action of natural gas and L.P. gas ***must be*** used.

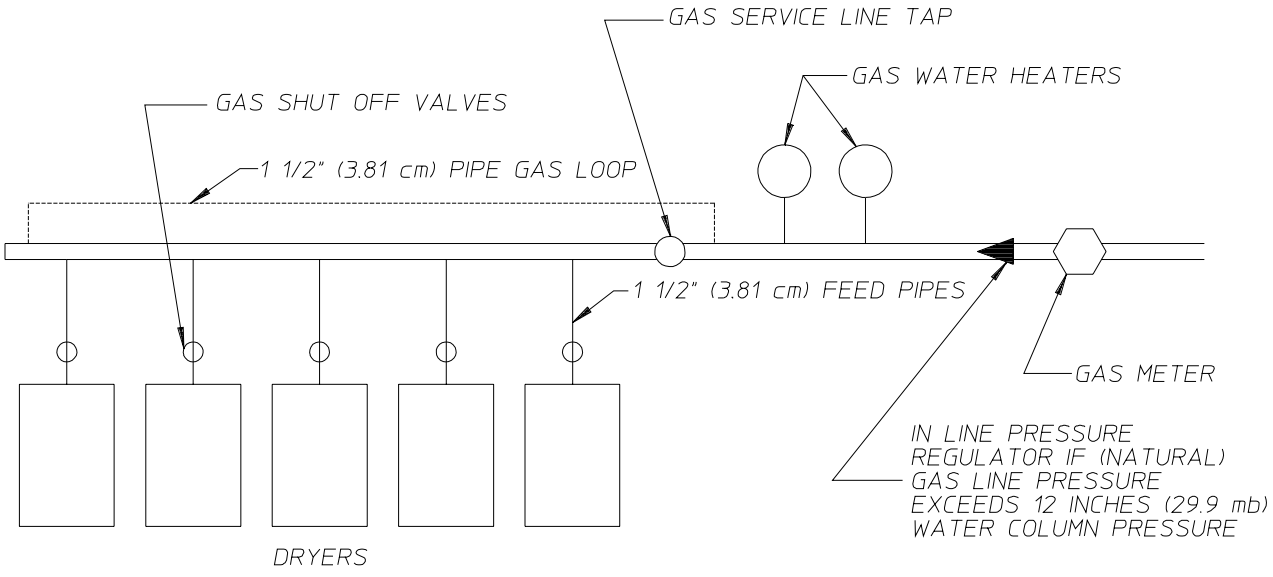
IMPORTANT: Test **ALL** connections for leaks by brushing on a soapy water solution (liquid detergent works well).

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

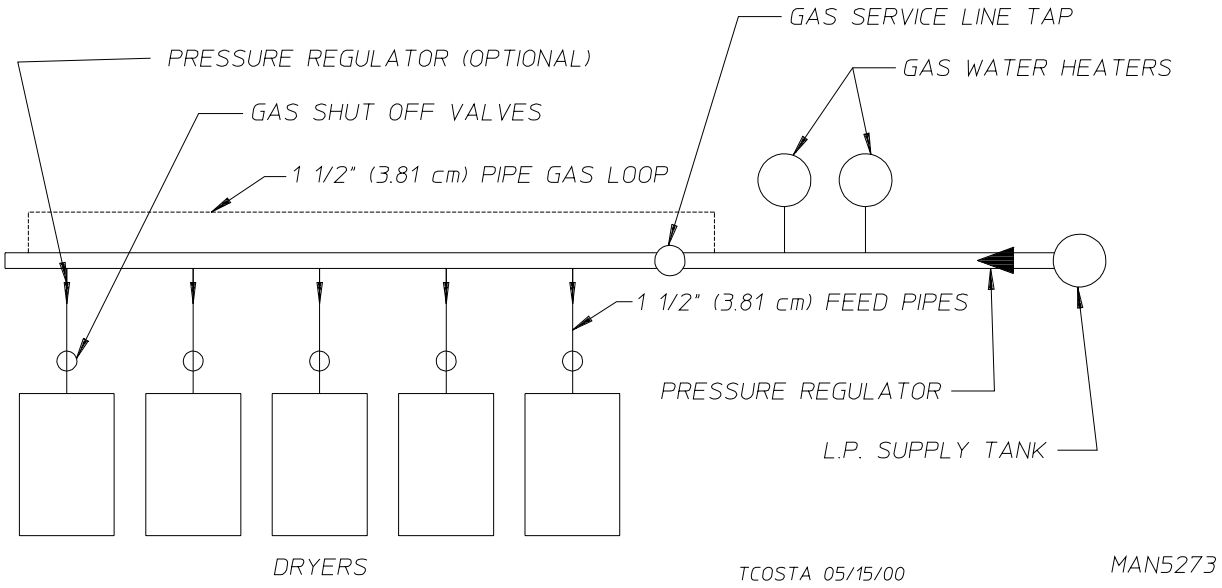
IMPORTANT: The dryer and its individual shutoff valve ***must be*** disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

NOTE: The dryer ***must be*** isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure test of the gas supply system at test pressures equal to or less than 1/2 psig (3.5 kPa).

TYPICAL NATURAL GAS INSTALLATION



TYPICAL L.P. GAS INSTALLATION



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H. STEAM INFORMATION

It is your responsibility to have **ALL** steam plumbing connections made by a qualified professional to ensure that the installation is adequate and conforms to local and state regulations or codes.

IMPORTANT: Failure to comply with the requirements stipulated in this manual can result in component failure, which will VOID THE WARRANTY.

NOTE: This dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply of clean, dry, and regulated air (80 psi ± 10 psi [5.51 bar ± 0.69 bar]). Refer to **Steam Damper Air System Connections**, **Section H**, **item 4**.

1. Steam Coil pH Level

   The normal pH level for copper type steam coils **must be** maintained between a value of 8.5 to 9.5. For steel type steam coils the pH level **must be** maintained between a value of 9.5 to 10.5. These limits are set to limit the acid attack of the steam coils.

IMPORTANT: Coil failure due to improper pH level will VOID THE WARRANTY.

2. Steam Requirements – High Pressure

   Inlet ------- 1-1/2" supply line connection -------- one (1) at top manifold.
   Return ---- 1-1/2" return line connection -------- one (1) at bottom manifold.

Operating Steam Pressure		
Maximum	125 psig*	**861.84 kPa**
Heat Input (Normal Load)	19 Bhp	
Consumption (Approximate)	725 lb/hr	**328.85 kg/hr**

Shaded areas are stated in metric equivalents

* The minimum operating pressure for optimum results is 100 psig (689.47 kPa).

3. Installation Instructions

   To ensure an adequate supply of steam is provided, be sure that the steam supply lines and steam return lines are sized and laid out as stipulated in this manual. Inadequate steam supply lines and steam return lines or improper steam plumbing will result in poor performance and can cause component failure. Clean, dry steam **must be** provided to the dryer.

IMPORTANT: Steam coil failure due to water hammer by wet steam will VOID THE WARRANTY.

a. The presence of the condensate in the steam supply line will cause water hammer and subsequent heat exchanger (steam coil) failure. The steam supply connection into the main supply line **must be** made with a minimum 10-inch (25.4 cm) riser. This will prevent any condensate from draining towards the dryer.

b. The steam supply line to the dryer must include a 12-inch (30.48 cm) riser along with a drip trap and check valve. This will prevent any condensate from entering the steam coil.

c. Flexible hoses or couplings **must be** used. The dryer vibrates slightly when it runs and this will cause the steam coil connections to crack if they are hard piped to the supply and return mains.

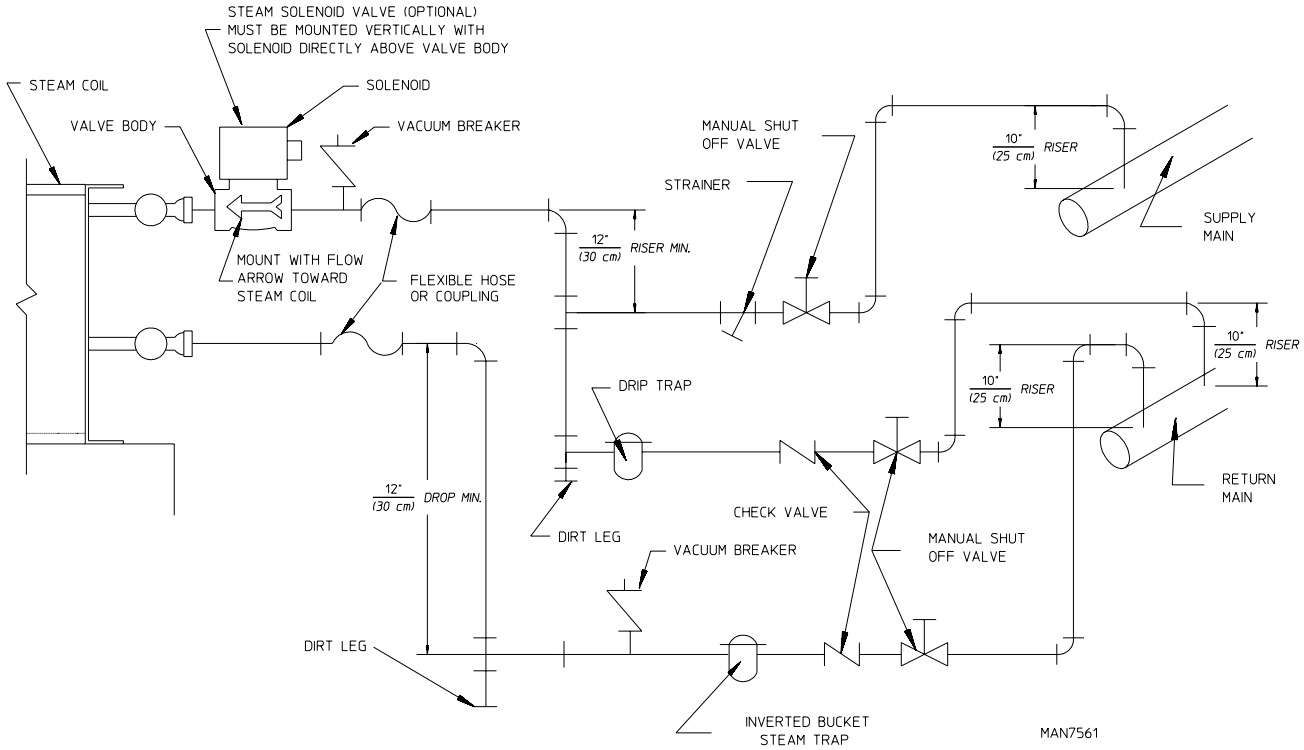
d. Shutoff valves for each dryer **should be** installed in the supply line, return line, and drip trap return line. This will allow the dryer to be isolated from the supply main and the return main if the dryer needs maintenance work.

e. Install an inverted bucket steam trap and check valve at least 12-inches (30.48 cm) below the steam coil as close to the coil as possible. An inverted bucket steam trap with a capacity of 1,900 lb (861.82 kg) of condensate per hour at 125 psi (8.62 bar) is required for each dryer.

f. A 3/4-inch (19.05 mm) vacuum breaker **should be** installed. This will save energy and provide for the safety of the operator and maintenance personnel.

g. Dryers with optional solenoid valve **must be** mounted with coil positioned directly above the valve body.

h. Water pockets in the supply line, caused by low points, will provide wet steam to the coil possibly causing steam coil damage. **ALL** horizontal runs of steam supply piping **should be** pitched 1/4-inch (6.35 mm) for every 1 foot (0.30 meters) back towards the steam supply header causing the condensate in the line to drain to the header. Install a bypass trap in any low point to eliminate wet steam.



4. Steam Damper Air System Connections

This dryer is manufactured with a pneumatic (piston) damper system, which requires an external supply of compressed air. The air connection is made to the steam damper solenoid valve, which is located at the rear inner top area of the dryer, just in front of the electric service relay box (refer to the **bottom illustration** on **page 30**).

a. Air Requirements

Compressed Air Supply	Air Pressure	
Normal	80 psi	**5.51 bar**
Minimum Supply	70 psi	**4.82 bar**
Maximum Supply	90 psi	**6.21 bar**

Shaded areas are stated in metric equivalents

b. Air Connection

Air connection to system --- 1/8" N.P.T.

c. No air regulator or filtration is provided with the dryer. External regulation/filtration of 80 psi (5.51 bar) **must be** provided. It is suggested that a filter/regulator/gauge arrangement be added to the compressed air line just before the dryer connection. This is necessary to ensure that correct and clean air pressure is achieved.

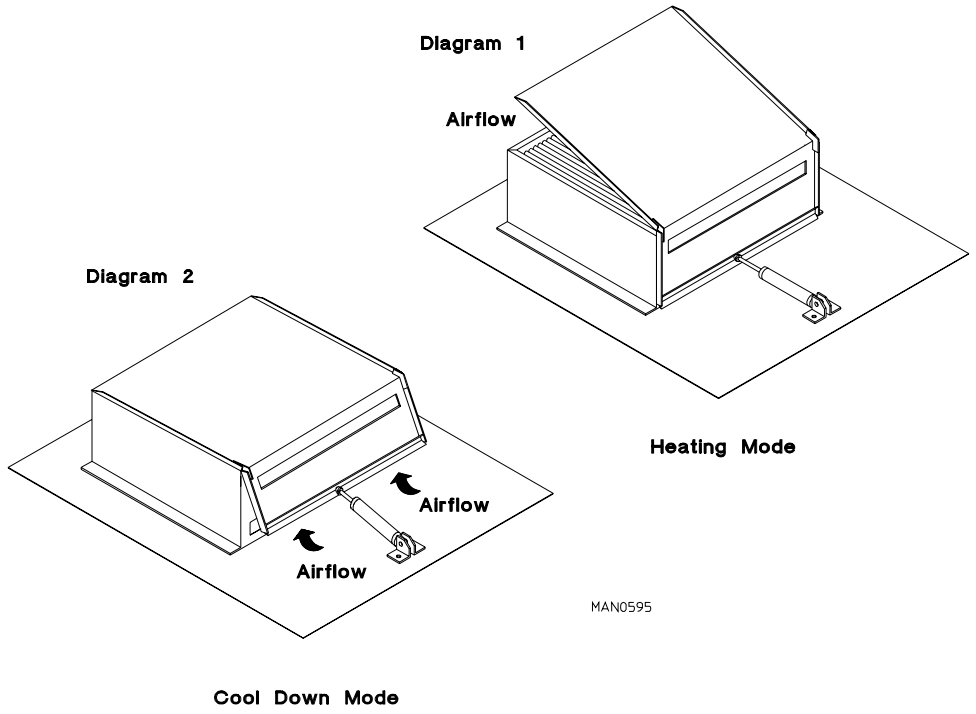
5. Steam Damper System Operation

The dryer's steam damper as shown in the **top illustration** on **page 30**, allows the coil to stay constantly charged eliminating repeated expansion and contraction. When the damper is opened, the air immediately passes through the already hot coil, providing instant heat to start the drying process. When the damper is closed, ambient air is drawn directly into the basket (tumbler), allowing a rapid cool down.

Diagram 1 shows the damper in the heating (open) mode, allowing heat into the basket (tumbler).

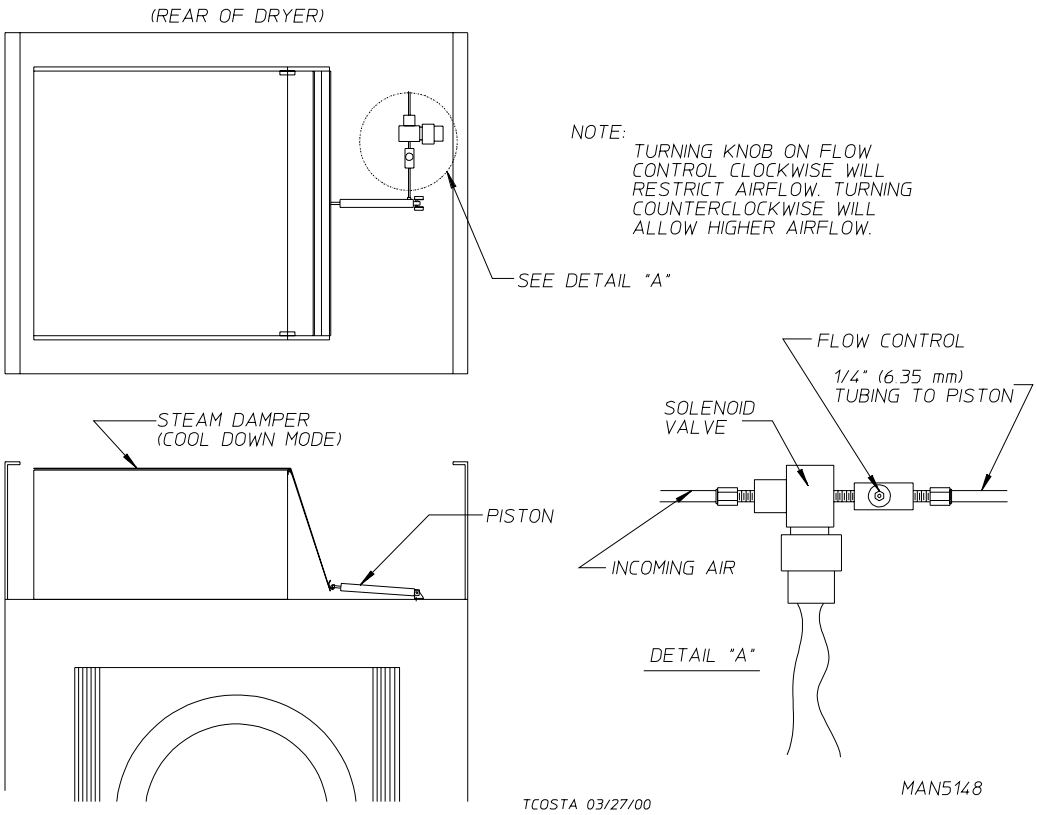
Diagram 2 shows the damper in the cool down (closed) mode, pulling ambient air directly into the basket (tumbler) without passing through the coils.

NOTE: With the dryer off or with no air supply, the steam damper is in cool down mode as shown in **Diagram 2** at the top of **page 30**.



6. Steam Damper Air Piston (Flow Control) Operation Adjustment

Although the steam damper operation was tested and adjusted prior to shipping at 80 psi (5.51 bar), steam damper operation **must be** checked before the dryer is put into operation (refer to the **illustration above** for correct steam damper operation). If steam damper adjustment is necessary, locate the flow control valve and make the necessary adjustments as noted below.



I. PREPARATION FOR OPERATION/START-UP

The following items **should be** checked before attempting to operate the dryer:

1. Read **ALL** "**CAUTION**," "**WARNING**," and "**DIRECTION**" labels attached to the dryer.

2. Check incoming supply voltage to be sure that it is the same as indicated on the dryer's data label. In the case of 208 VAC or 240 VAC, the supply voltage must match the electric service **exactly**.

3. GAS MODELS – Check to ensure that the dryer is connected to the type of heat/gas indicated on the dryer's data label.

4. GAS MODELS – The sail switch damper assembly was installed and pre-adjusted at the factory prior to shipping. However, each sail switch adjustment **must be** checked to ensure that this important safety control is functioning.

5. Check to be sure that the drive belts between the idler pulley and the motor pulley have been reconnected.

NOTE: The drive belts were disconnected at the factory prior to dryer shipment.

6. GAS MODELS – Be sure that **ALL** gas shutoff valves are in the open position.

7. Be sure **ALL** back panels (guards) and electric box covers have been replaced.

8. Check **ALL** service doors to ensure that they are closed and secured in place.

9. Be sure the lint drawer is securely in place.

NOTE: LINT DRAWER *MUST BE* ALL THE WAY IN PLACE TO ACTIVATE THE SAFETY SWITCH OTHERWISE THE DRYER WILL NOT START.

10. Rotate the basket (tumbler/drum) by hand to be sure it moves freely.

11. Check bolts, nuts, screws, terminals, and fittings for security.

12. STEAM MODELS – Check to ensure air supply (80 psi [5.51 bar]) is connected to the dryer.

13. Check basket (tumbler) bearing setscrews to ensure they are **ALL** tight.

14. STEAM MODELS – Check to ensure **ALL** steam shutoff valves are open.

15. STEAM MODELS – Check steam damper operation.

J. PREOPERATIONAL TESTS

ALL dryers are thoroughly tested and inspected before leaving the factory. However, a preoperational test **should be** performed before the dryer is publicly used. It is possible that adjustments have changed in transit or due to marginal location (installation) conditions.

1. Turn on electric power to the dryer.

2. Make sure the main door is closed and the lint drawer is securely in place.

3. Refer to the Operating Instructions for starting your particular model dryer.

4. Check to ensure that the basket (tumbler) starts in the clockwise (CW) direction. Additionally, check the direction of the blower motor impellor (fan) to ensure that the impellor (fan) rotates in the clockwise (CW) direction as viewed from the front. If it is, the phasing is correct. If the phasing is incorrect, reverse two (2) of the leads at L1, L2, or L3 of the power supply connections made to the dryer.

IMPORTANT: Dryer blower motor/pulley that drives the impellor/fan (squirrel cage) when viewed from the back of the dryer must turn in the counterclockwise (CCW) direction, otherwise the dryer efficiency **will be** drastically reduced and premature component failure can result.

5. Heat Circuit Operational Test

   Gas Models

   a. When the dryer is first started (during initial start-up), the burner has a tendency not to ignite on the first attempt. This is because the gas supply piping is filled with air, so it may take a few minutes for this air to be purged from the lines.

   b. The dryer is equipped with a Direct Spark Ignition (DSI) system, which has internal diagnostics. If ignition is not established after three (3) attempts, the heat circuit DSI module will LOCKOUT until it is manually reset. To reset the DSI system, open and close the main door and restart the dryer (press the "ENTER/START" key).

NOTE: During the purging period, check to be sure that **ALL** gas shutoff valves are open.

   c. Once ignition is established, a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to ensure that the water column (W.C.) pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the gas valve pressure tap):

Natural Gas ..... 3.5 inches (8.7 mb) water column.
Liquid Propane (L.P.) Gas ..... 10.5 inches (26.1 mb) water column.

IMPORTANT: There is no regulator provided in an L.P. dryer. The water column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

6. Make a complete operational check of **ALL** safety-related circuits (i.e., lint drawer switch and sail switch on gas models).

> **NOTE:** To check for proper sail switch operation, open the main door and while holding main door switch plunger in, start the dryer. The dryer should start but the heat circuit ***should not be*** activated (on). If the heat (burner) does activate, shut the dryer off and make the necessary adjustments.

7. Reversing basket (tumbler) dryers **should never be** operated with less than a 125 lb (56.69 kg) load (dry weight), since the load's weight effects the basket (tumbler) coast time during a direction reversal command. It is important that the basket (tumbler) comes to a complete stop prior to starting in opposite direction.

    a. Microprocessor Controller (Computer) Dryer Models

        1) Spin and dwell (stop) times are not adjustable in the Automatic Mode and have been preprogrammed into the microprocessor controller (computer) for 150-seconds spin time in the forward direction and 120-seconds in the reverse direction with a 5-second dwell (stop) time.

        2) Spin and dwell (stop) times are adjustable in the Manual (timed) Mode.

    b. Dual Timer Dryer Models

        Both spin time and dwell (stop) time are adjustable (refer to **page 35**).

BASKET (TUMBLER) COATING

The basket (tumbler) is treated with a protective coating. We suggest dampening old garments or cloth material with a solution of water and nonflammable mild detergent and tumbling them in the basket (tumbler) to remove this coating.

8. Each dryer **should be** operated through one (1) complete cycle to ensure that no further adjustments are necessary and that **ALL** components are functioning properly.

9. Make a complete operational check of **ALL** operating controls.

    a. Microprocessor Controller (Computer) Programs/Selections

        Each microprocessor controller (computer) has been preprogrammed by the factory with the most commonly used parameter (program) selections. If computer changes are required, refer to the computer programming manual which was shipped with the dryer.

    b. Dual Timer Check

        1) Heating Timer

        2) Cool Down Timer

        3) Temperature Selection Switch

K. PREOPERATIONAL INSTRUCTIONS

NON-COIN MODELS

1. The light emitting diode (L.E.D.) display reads “READY” (no cycle in progress).

2. Press the letter on the keyboard (touch pad) corresponding to the cycle desired (i.e., key “D”).

NOTE: “0-40” WILL REQUIRE THE “START/ENTER” KEY TO BE PRESSED AFTER THE NUMBER IS SELECTED IN ORDER TO ACCEPT THE SELECTION AND START DRYING.

3. The dryer will then start. (I.E., blower, basket [tumbler], and heat.)

4. The L.E.D. display will read MANUAL DRYING CYCLE D, 00:00 MIN REMAIN.

NOTE: Press and hold the “UP ARROW” to view the basket (tumbler) temperature at any time.

NOTE: The dryer can be stopped at any time by pressing the “STOP/CLEAR” key, at this time the dryer will go into a cycle pause. If the “STOP/CLEAR” key is pressed again at this point, the cycle that was in progress **will be** cancelled and returned to the “READY” state.

NOTE: Press and hold the “DOWN ARROW” to view the basket (tumbler) RPM.

5. When the programmed drying time has expired, the Phase 7 non-coin microprocessor controller (computer) will proceed into the Cool Down Cycle.

6. Once the Cool Down Cycle begins at the end of the heat cycle, the L.E.D. display will read COOL DOWN TEMP ___/___ MINUTES REMAINING. At the end of the heat cycle, the dryer will shut off the heat and continue the fan and basket (tumbler) until the Cool Down Time or temperature is reached.

IMPORTANT: For more detailed information regarding the microprocessor controller (computer) on the dryer, refer to the microprocessor user’s manual included with the dryer.

DUAL TIMER DRYERS

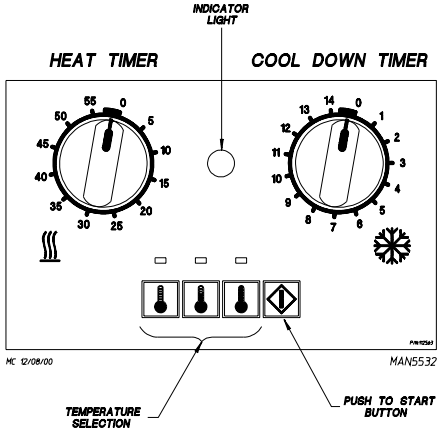
1. Turn drying timer knob for a time of 20 minutes.

2. Select “High Temp.”

3. Push “Push to Start” button.

4. To stop dryer, open the main door.

   Spin and dwell (stop) times are adjustable at the reversing timer.

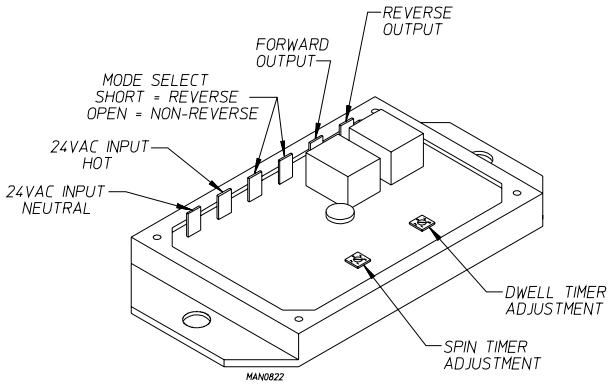


REVERSING TIMER SPIN/DWELL ADJUSTMENTS

Timer models have an electronic reversing timer in the electrical service box, which is located in the upper left rear area of the dryer.

Both the dwell (stop) time and the basket (tumbler) spin time are adjustable by mode selection switches located on the electronic timer (as noted in the **illustration below**).

TIMING LEGEND					
SPIN TIME					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	30	60	90	120	150
DWELL (STOP) TIME					
Adjustment Position Number	1	2	3	4	5
Time in Seconds*	5	6.3	7.6	8.9	10.2
* Values shown are +/- 1-second.					



L. COMPRESSED AIR REQUIREMENTS

This model dryer requires an external supply of compressed air (3.5 cfh at 80 psi [0.09 cmh at 5.51 bar] for gas models and 4.25 cfh at 80 psi [0.12 cmh at 5.51 bar] for steam models). For steam models, compressed air is necessary for the air operated steam damper. On both the steam models as well as the gas models, compressed air is necessary/required for blower air jet operation to clean lint from the impellor/fan (squirrel cage).

1. Air Requirements

   a. Microprocessor Controller (Computer) Dryers

Compressed Air Supply	Air Pressure	
Normal	80 psi	**5.51 bar**
Minimum Supply	70 psi	**4.82 bar**
Maximum Supply	90 psi	**6.21 bar**

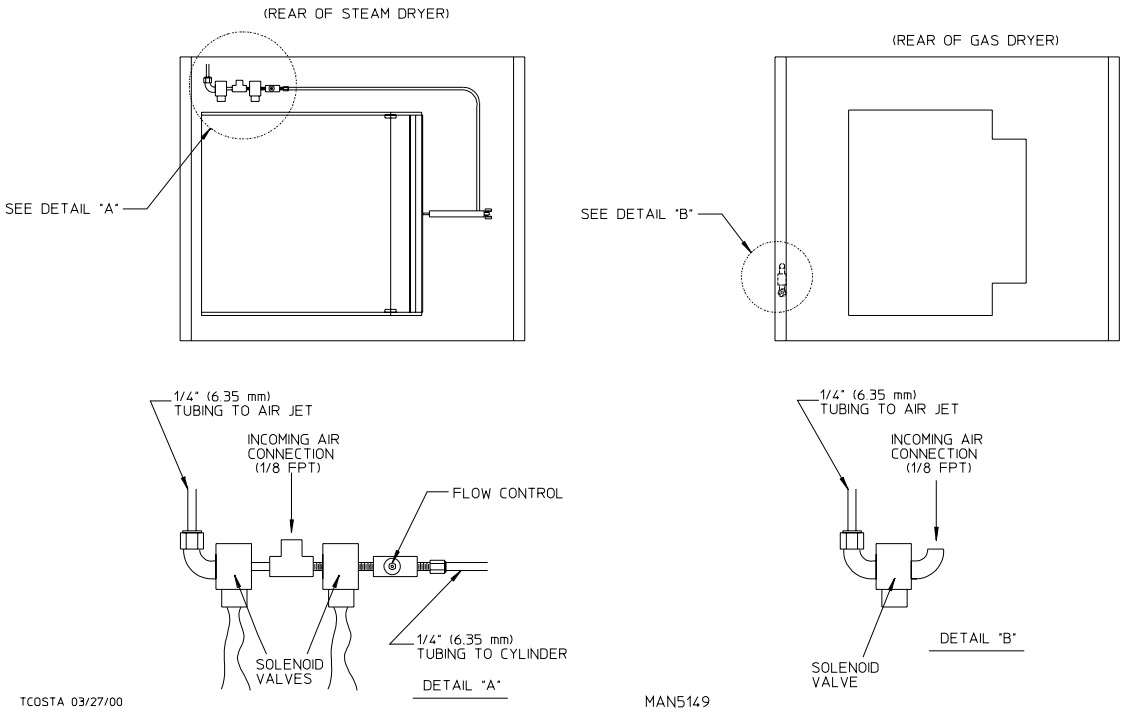
Shaded areas are stated in metric equivalents

2. Air Regulation

   No air regulation or air filtration is provided with the dryer. External regulation/filtration of 80 psi (5.51 bar) **must be** provided. It is suggested that a filter/regulator/gauge arrangement be added to the compressed air line just before the dryer connection. This is necessary to ensure that correct and clean air pressure is achieved.

3. Air Connection

Incoming air connection to this system is an 1/8” F.P.T. (female pipe thread) as per the **illustration below**.



M. SHUTDOWN INSTRUCTIONS

If the dryer is to be shutdown (taken out of service) for a period of time, the following **must be** performed:

1. Discontinue power to the dryer either at the external disconnect switch or the circuit breaker.
2. Discontinue the heat supply:
   a. **GAS MODELS – discontinue the gas supply**.

      SHUT OFF external gas supply shutoff valve.

   b. **STEAM MODELS – discontinue the steam supply**.

      SHUT OFF external (location furnished) shutoff valve.

SECTION IV
SERVICE/PARTS INFORMATION

A. SERVICE

Service **must be** performed by a qualified trained technician, service agency, or gas supplier. If service is required, contact the reseller from whom the **ADC** equipment was purchased. If the reseller **cannot** be contacted or is unknown, contact the **ADC** Service Department for a reseller in your area.

NOTE: When contacting the **ADC** Service Department, be sure to give them the correct **model number** and **serial number** so that your inquiry is handled in an expeditious manner.

B. PARTS

Replacement parts **should be** purchased from the reseller from whom the **ADC** equipment was purchased. If the reseller **cannot** be contacted or is unknown, contact the **ADC** Parts Department for a reseller in your area. Parts may also be purchased directly from the factory by calling the **ADC** Parts Department at +1 (508) 678-9000 or you may FAX in your order at +1 (508) 678-9447.

NOTE: When ordering replacement parts from the **ADC** reseller or the **ADC** factory be sure to give them the correct **model number** and **serial number** so that your parts order can be processed in an expeditious manner.

SECTION V
WARRANTY INFORMATION

A. RETURNING WARRANTY CARDS

Before any dryer leaves the **ADC** factory test area, a warranty card is placed on the back side of the main door glass. These warranty cards are intended to serve the customer where we record the individual installation date and warranty information to better serve you should you file a warranty claim.

If a warranty card did not come with your dryer, contact the **ADC** Warranty Department or the **ADC** Service Department at +1 (508) 678-9000.

IMPORTANT: A separate warranty card ***must be*** completed and returned for each individual dryer.

NOTE: Be sure to include the installation date when returning the warranty card(s).

B. WARRANTY

For a copy of the **ADC** commercial warranty covering your particular dryer(s), contact the **ADC** reseller from whom you purchased the equipment and request a dryer warranty form. If the reseller **cannot** be contacted or is unknown, warranty information can be obtained from the factory by contacting the **ADC** Warranty Department at +1 (508) 678-9000.

NOTE: Whenever contacting the **ADC** factory for warranty information, be sure to have the dryer's **model number** and **serial number** available so that your inquiry can be handled in an expeditious manner.

C. RETURNING WARRANTY PARTS

ALL dryer or parts warranty claims or inquiries **should be** addressed to the **ADC** Warranty Parts Department. To expedite processing, the following procedures **must be** followed:

1. No parts are to be returned to **ADC** without prior written authorization ("Return Material Authorization" [R.M.A.]) from the factory.

NOTE: An R.M.A. is valid for only thirty (30) days from date of issue.

The R.M.A. issued by the factory, as well as any other correspondence pertaining to the returned part(s), **must be** included inside the package with the failed merchandise.

2. Each part **must be** tagged with the following information:

   a. **Model number** and **serial number** of the dryer from which part was removed.

   b. Nature of failure (be specific).

   c. Date of dryer installation.

   d. Date of part failure.

   e. Specify whether the part(s) being returned is for a replacement, a credit, or a refund.

NOTE: If a part is marked for a credit or a refund, the invoice number covering the purchase of the replacement part ***must be*** provided.

NOTE: Warranty tags (**ADC** Part No. 450064) are available at "no charge" from **ADC** upon request.

3. The company returning the part(s) must clearly note the complete company name and address on the outside of the package.

4. **ALL** returns **must be** properly packaged to ensure that they are not damaged in transit. *Damage claims are the responsibility of the shipper.*

IMPORTANT: No replacements, credits, or refunds **will be** issued for merchandise damaged in transit.

5. **ALL** returns **should be** shipped to the **ADC** factory in such a manner that they are ensured and a proof of delivery can be obtained by the sender.

6. **Shipping charges are not the responsibility of ADC. ALL returns should be "prepaid" to the factory. Any "C.O.D." or "COLLECT" returns will not be accepted.**

IMPORTANT: No replacements, credits, or refunds **will be** issued if the claim **cannot** be processed due to insufficient information. The party filing the claim **will be** notified in writing, either by "FAX" or "CERTIFIED MAIL – Return Receipt Requested," as to the information necessary to process claim. If reply **is not** received by the **ADC** Warranty Department within thirty (30) days from the FAX/letter date, then no replacements, credits, or refunds **will be** issued, and the merchandise **will be** discarded.

SECTION VI

ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the ductwork system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and most importantly, safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR AND FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, AND OTHER FLAMMABLE VAPORS AND LIQUIDS.

NOTE: REMOVE POWER FROM THE DRYER BEFORE PERFORMING ANY MAINTENANCE IN THE DRYER (cleaning the lint drawers and both steam coil lint screens are the only exceptions).

NOTE: Suggested time intervals shown are for average usage which is considered six (6) to eight (8) operational (running) hours per day.

IMPORTANT: Dryer produces combustible lint and ***must be*** exhausted to the outdoors. Every 6 months, inspect the exhaust ducting and remove any lint buildup.

CLEAN LINT FROM LINT DRAWER/SCREEN EVERY THIRD OR FOURTH LOAD.

NOTE: The frequency of cleaning the lint screens can best be determined from experience at each location.

WEEKLY

Clean lint accumulation from the lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: TO AVOID HAZARD OF ELECTRICAL SHOCK, DISCONTINUE ELECTRICAL POWER SUPPLY TO THE DRYER.

STEAM DRYERS

Clean the steam coil fins. We suggest using compressed air and a vacuum cleaner with brush attachment.

NOTE: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb, which is available from any local air-conditioning supply house.

90 DAYS

Remove lint from around basket (tumbler), drive motors, and surrounding areas. Remove lint from the gas valve burner area with a dusting brush or vacuum cleaner attachment.

Impellor (fan/blower) shaft bearings **should be** lubricated using Shell Alvania NLGI2 or its equivalent. Generically, this grease would be described as an NLGI grade 2 multipurpose industrial grease with a lithium thickener and mineral base oil.

Check to make sure that the setscrews on the impellor/fan shaft bearings are tight.

NOTE: To prevent damage, avoid cleaning and/or touching the Direct Spark Ignitor.

Remove lint accumulation from inside.

6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust ductwork system and from dryer's internal exhaust ducting.

NOTE: THE ACCUMULATION OF LINT IN THE EXHAUST DUCTWORK CAN CREATE A POTENTIAL FIRE HAZARD.

NOTE: ***DO NOT*** OBSTRUCT THE FLOW OF COMBUSTION AND VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPERS IN THE EXHAUST DUCTWORK. INSPECT AND REMOVE ANY LINT ACCUMULATION, WHICH CAN CAUSE THE DAMPER TO BIND OR STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shutdown of the heat circuit safety switches or thermostats.

NOTE: When cleaning the dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

Check **ALL** V-belts for tightness and wear. Retighten, realign, or replace if required.

NOTE: V-belts ***should be*** replaced in matched sets (pairs).

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION AND EVERY 6 MONTHS THEREAFTER

Inspect bolts, nuts, screws, setscrews, grounding connections, and nonpermanent gas connections (i.e., unions, shutoff valves, and orifices). Fan (impellor) V-belts, along with the motor and drive belts **should be** examined and replaced if necessary. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (i.e., door switches, lint drawer switch, sail switch, burner, and hi-limit thermostats).

Squirrel cage type fan (impellor) on the blower motor **must be** inspected and cleaned every 6 months.

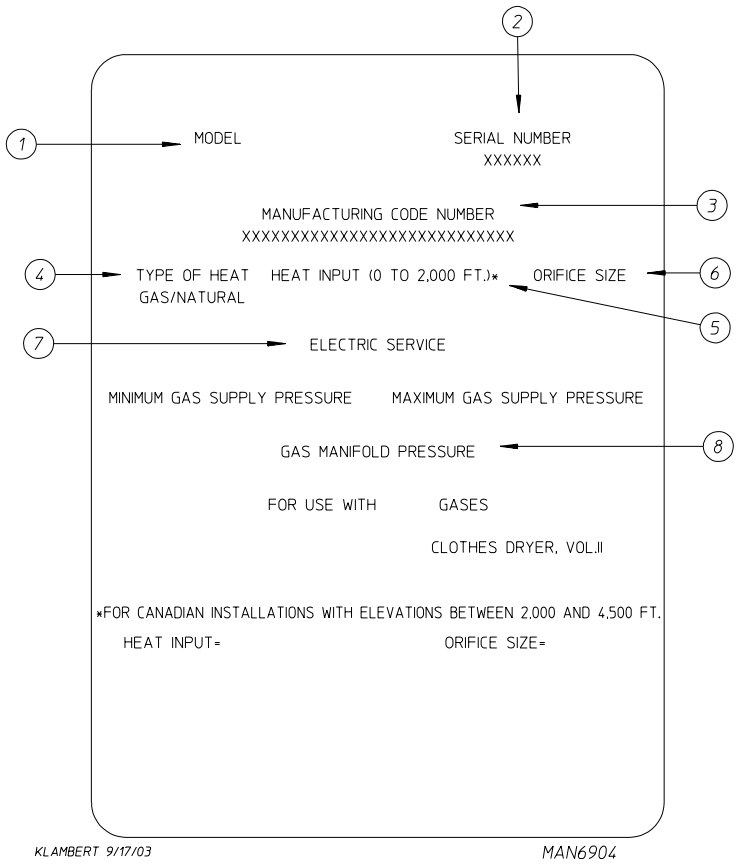
C. LUBRICATION

The fan shaft bearing, and **ALL** the basket (tumbler) drive shaft and idler shaft bearings **must be** lubricated every 3 months. Use a #2 Alvania grease or its equivalent. Lubrication is necessary or premature bearing failure will be the result.

The motor bearings are permanently lubricated and **DO NOT** require to be serviced.

SECTION VII

DATA LABEL INFORMATION



When contacting **American Dryer Corporation**, certain information is required to ensure proper service/parts information from **ADC**. This information is on the data label that is affixed to the left side panel area behind the top control (access) door. When contacting **ADC**, please have the **model number** as well as the **serial number** readily available.

1. **MODEL NUMBER** – Describes the size of the dryer and the type of heat (gas, electric, or steam).

2. **SERIAL NUMBER** – Allows the manufacturer to gather information on your particular dryer.

3. **MANUFACTURING CODE NUMBER** – The number issued by the manufacturer, which describes **ALL** possible options on your particular model.

4. **TYPE OF HEAT** – This describes the type of heat for your particular dryer, gas (either natural gas or liquid propane [L.P.] gas), electric, or steam.

5. **HEAT INPUT** (for GAS DRYERS) – This describes the heat input in British thermal units per hour (Btu/hr).

6. **ORIFICE SIZE** (for GAS DRYERS) – Gives the number drill size used.

7. **ELECTRIC SERVICE** – This describes the electric service for your particular model.

8. **GAS MANIFOLD PRESSURE** (for GAS DRYERS) – This describes the manifold pressure taken at the gas valve tap.

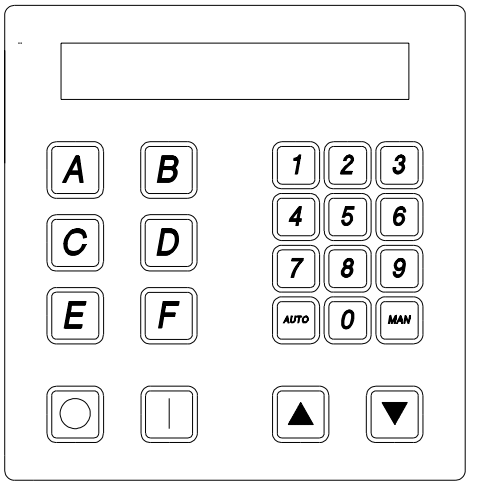
SECTION VIII

PROCEDURE FOR FUNCTIONAL CHECK OF REPLACEMENT COMPONENTS

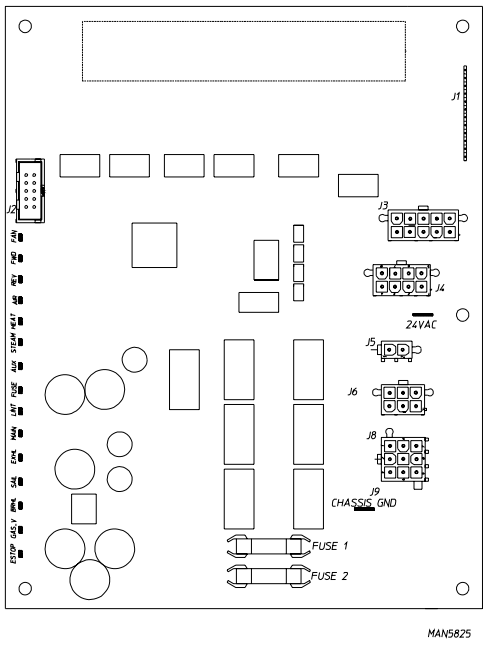
1. Microprocessor Controller (Computer) Board

   a. Upon completing installation of the replacement microprocessor controller (computer) board, reestablish power to the dryer.

   b. Start the drying cycle by pressing any of the preset cycles in letters A-F.



   c. Verify that the applicable indicator lights on the back side of the microprocessor controller (computer) board are lit (refer to the **illustration below**).



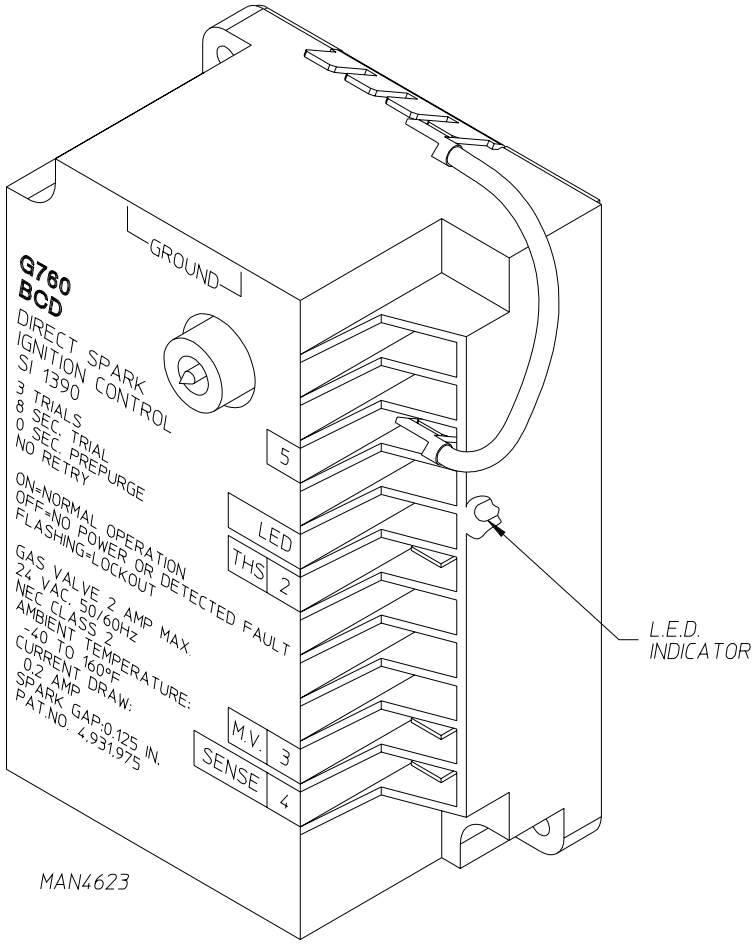
2. For Models with Direct Spark Ignition (DSI) Module (Type I)

Theory Of Operation:

Start the drying cycle. When the gas burner ignites within the chosen trial for ignition time (6-seconds), the flame sensor detects gas burner flame and signals the DSI module to keep the gas valve open, as long as there is a call for heat. The DSI module will "LOCKOUT" if the gas burner flame is not sensed at the end of the trial for ignition period. The trial for ignition period will be repeated for a total of three (3) retries/trials (the initial try and two [2] more retries/trials). If the flame is not sensed at the end of the third retry/trial (inter-purge period of 30-seconds) the DSI module will "LOCKOUT" (light emitting diode [L.E.D.] flashes).

A steady L.E.D. indicator indicates *normal operation*.

No L.E.D. indicator indicates a power or an internal failure has occurred.



SECTION IX

MANUAL RESET BURNER HI-LIMIT INSTRUCTIONS

A. PHASE 7

This dryer was manufactured with a manual reset burner hi-limit thermostat, which is monitored by the Phase 7 computer. If the burner hi-limit is open prior to the start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 7 computer will display "BURNER HIGH LIMIT FAULT" with an audio indication.

If the burner hi-limit opens during a drying cycle, the Phase 7 computer will also display the same error code described above, along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for 3 minutes or until the drum temperature has dropped below 100° F (38° C). For non-coin models, the clear/stop button on the Phase 7 keyboard (touch pad) **must be** pressed to clear the error condition. For coin models, the pause key **must be** held down for 3-seconds to clear the fault. The open burner hi-limit **must be** reset "manually" prior to the start of the next cycle.

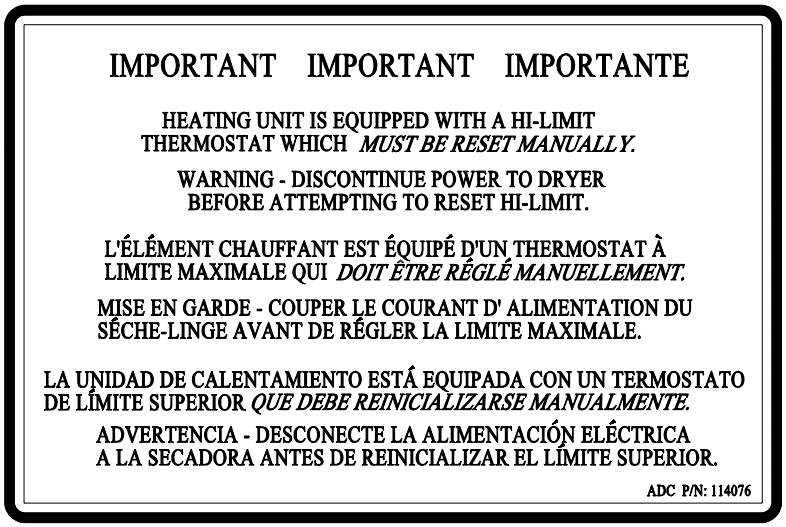
B. DUAL TIMER

This dryer was manufactured with a manual reset burner hi-limit thermostat. If the burner hi-limit is open prior to the start of the drying cycle, or during the cycle, the dryer will not recognize the open state of the burner hi-limit and will start or continue through the drying cycle with no heat. Manual reset hi-limit **must be** reset manually.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow, or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box, looking at the burner from the back of the dryer.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.


IMPORTANT IMPORTANT IMPORTANTE
HEATING UNIT IS EQUIPPED WITH A HI-LIMIT THERMOSTAT WHICH *MUST BE RESET MANUALLY.*
WARNING - DISCONTINUE POWER TO DRYER BEFORE ATTEMPTING TO RESET HI-LIMIT.
L'ÉLÉMENT CHAUFFANT EST ÉQUIPÉ D'UN THERMOSTAT À LIMITE MAXIMALE QUI *DOIT ÊTRE RÉGLÉ MANUELLEMENT.*
MISE EN GARDE - COUPER LE COURANT D' ALIMENTATION DU SÊCHE-LINGE AVANT DE RÉGLER LA LIMITE MAXIMALE.
LA UNIDAD DE CALENTAMIENTO ESTÁ EQUIPADA CON UN TERMOSTATO DE LÍMITE SUPERIOR *QUE DEBE REINICIALIZARSE MANUALMENTE.*
ADVERTENCIA - DESCONECTE LA ALIMENTACIÓN ELÉCTRICA A LA SECADORA ANTES DE REINICIALIZAR EL LÍMITE SUPERIOR.
ADC P/N: 114076

SECTION X

FIRE SUPPRESSION SYSTEM (F.S.S.)

F.S.S. In Action

The exclusive Fire Suppression System (F.S.S.) will extinguish fires that may start in the drying basket (tumbler). A series of sensors positioned throughout the basket (tumbler) and interfaced with the microprocessor will trigger the F.S.S. water jet(s) to quickly extinguish the flames. The water jet(s) remain on for 2 minutes and will automatically activate again if a fire condition remains or reignites. While the water jet(s) are activated, the basket (tumbler) will jog to move the water throughout the load. The microprocessor will display that the system was activated and will continue to display until the dryer is attended to.

We have tried to make this manual as complete as possible and hope you will find it useful. **ADC** reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models.

BEFORE YOU START!

CHECK LOCAL CODES AND PERMITS

Call your local water company or the proper municipal authority for information regarding local codes.

IMPORTANT:	It is your responsibility to have **ALL** plumbing connections made by a qualified professional to ensure that the plumbing installation is adequate and conforms to local, state, and federal regulations or codes.

IMPORTANT:	It is the installation or owners responsibility to see that the necessary or required water, water pressure, pipe size, or connections are provided. Manufacturer assumes no responsibility if the fire suppression system (F.S.S.) **is not** connected, installed, or maintained properly.

INSTALLATION

1. Requirements

   The connection point to the electric water solenoid valve is a 1/2" M.P.T., the F.S.S. **must be** supplied with a minimum water pipe size of 1/2-inch and be provided with 40 psi ± 20 psi (2.75 bar ± 1.37 bar) of pressure. For use of optional manual bypass, a second source with the same piping and pressure requirements is required.

   Flexible 1/2 feeds **must be** provided to avoid damage to electric water solenoid valve by vibration.

IMPORTANT:	Flexible supply line/coupling ***must be*** used. Solenoid valve failure due to hard plumbing connections WILL VOID WARRANTY.

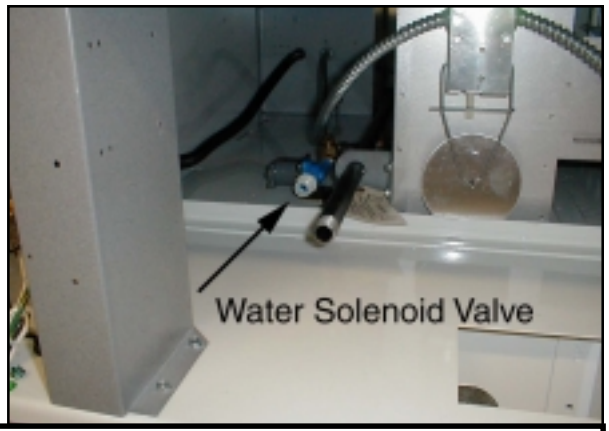
   If the rear area of the dryer, or the water supply is located in an area where it will be exposed to cold/ freezing temperatures, provisions **must be** made to protect these water lines from freezing.

WARNING:	If the water in the supply line or water solenoid valve freezes, the F.S.S. **will be** INOPERATIVE!!

IMPORTANT:	Appliance is to be connected to the water mains using a new hose set and the old hose set ***should not be*** reused.

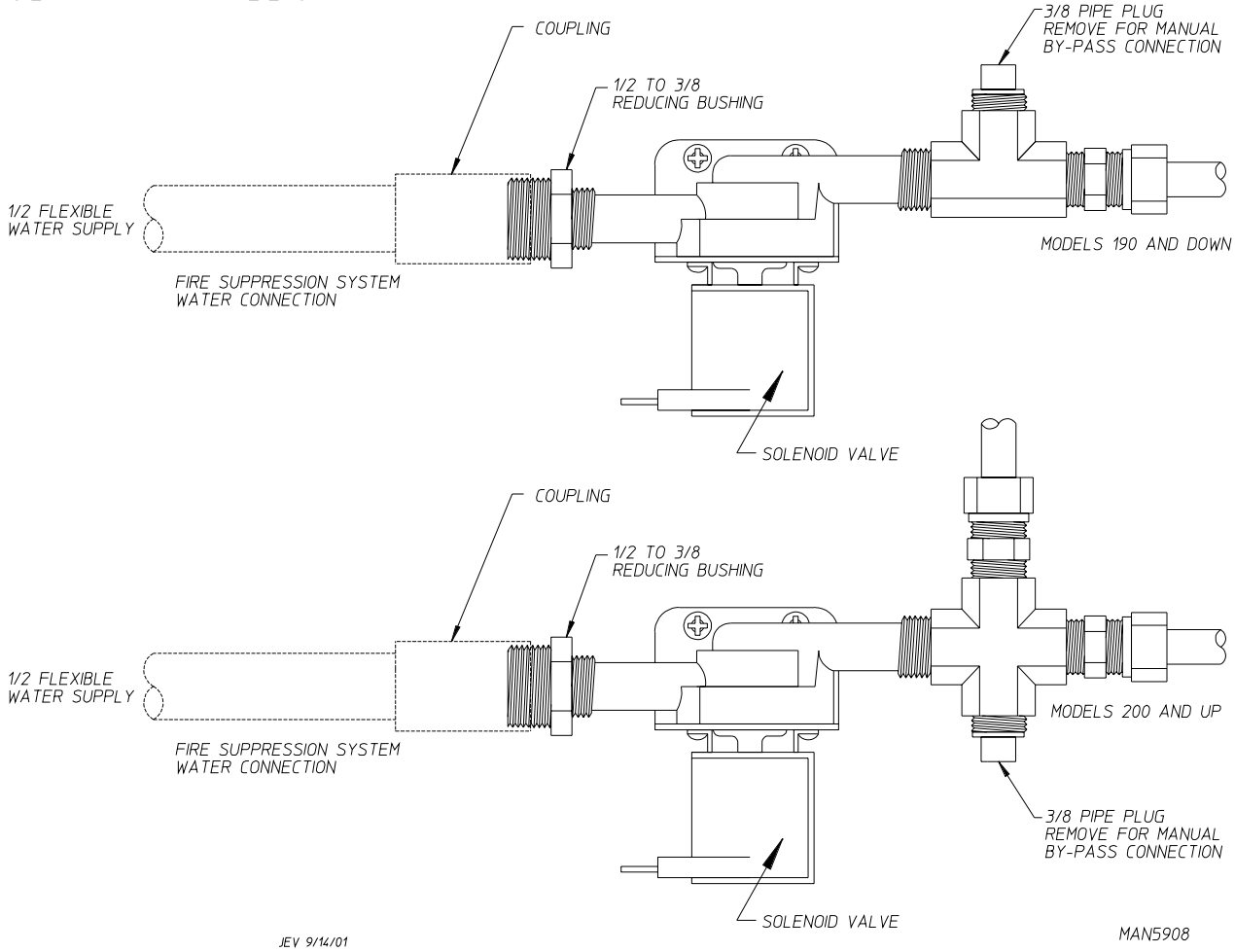
2. Water Connections:

The water connection is made to the 3/4-11.5 NH bushing of the electric water solenoid valve located at the rear upper left area of the dryer (see photo). The water solenoid valve has a 3/8" M.P.T. connection and a 1/2" bushing is supplied to provide the minimum 1/2-inch supply (feed) line. Flexible supply line/coupling **must be** used in effort to avoid damage to electric water solenoid valve.



IMPORTANT: Flexible supply line/coupling ***must be*** used. Solenoid valve failure due to hard plumbing connections WILL VOID WARRANTY. **It is recommended** that a filter or strainer be installed in the water supply line.

Typical water supply:

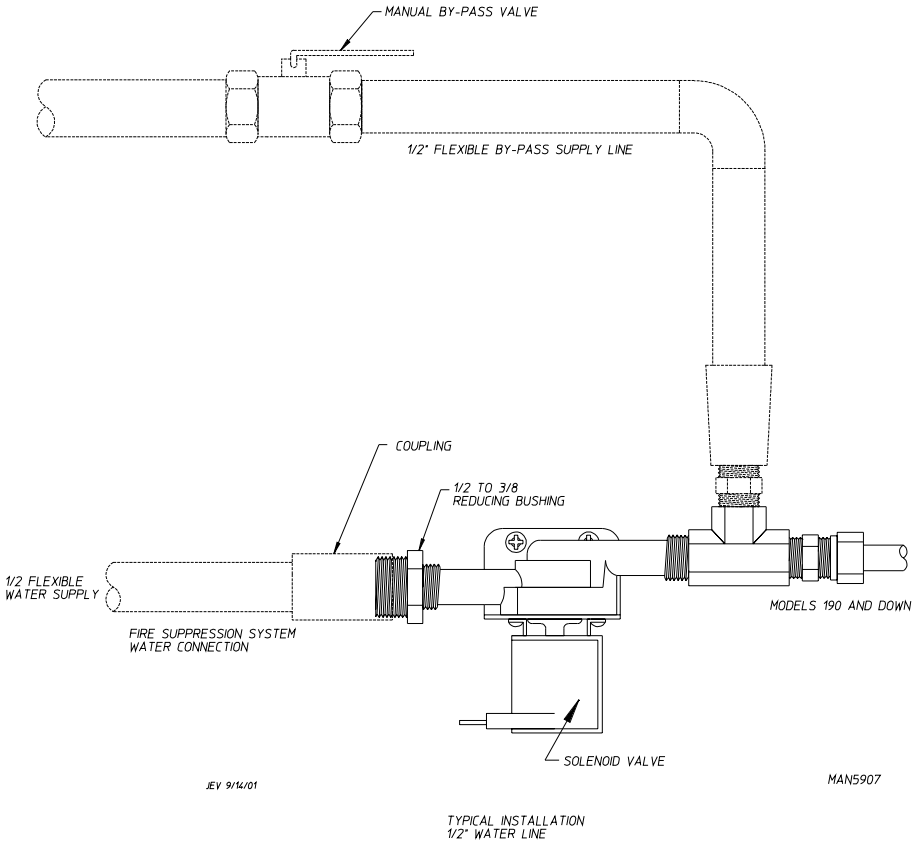


OPTIONAL MANUAL BYPASS

Provisions are made in the dryer fire suppression system (F.S.S.) for the installation of an optional manual bypass. Depending on the model dryer, the connections for the manual bypass are made at the "T" or "four way" fitting located in the outlet supply side of the water solenoid valve. The use and connections of this manual bypass are at the option or discretion of the owner.

The water connection for the manual bypass is made to the "T" or "four way" fitting which has a 3/8" F.P.T. and a coupling **must be** used to provide the minimum 1/2-inch supply (feed) line.

If the rear area of the dryer, or the water supply is located in an area where it <u>will</u> <u>be</u> exposed to cold/freezing temperatures, provisions **must be** made to protect these water lines from freezing.



TYPICAL INSTALLATION
1/2" WATER LINE

WARNING:	If the water in the supply line or water solenoid valve freezes, the F.S.S. **<u>will</u> <u>be</u>** INOPERATIVE!!

The manual ball cock shutoff valve **must be** located outside of the dryer at a distance from the dryer where it is easily accessible.

3. <u>Electrical Requirements</u>

   No independent external power source or supply connection is necessary. The 24 volt power to operate the fire suppression system (F.S.S.) is accomplished internally in the dryer (from the dryer controls).

WARNING:	Electrical power ***must be*** provided to the dryer at **<u>ALL</u>** times. If the main electrical power supply to the dryer is disconnected, the F.S.S. is INOPERATIVE!!

Fire Suppression System (F.S.S.) Theory of Operation

While the dryer is in an idle state or 20-seconds after the heat turns off, the Phase 7 control monitors the F.S.S. probe located in the top of the basket (tumbler) chamber and records the minimum temperature. If the minimum recorded F.S.S. probe temperature is no less than 120° F (48° C) and the control detects a 50° rise in temperature, this will be the trip point and the F.S.S. routine will activate.

While a drying cycle is in process and the heat has turned on at least once, the Phase 7 control monitors the exhaust temperature transducer. If the drying cycle temperature set point is set greater than 160° F (71° C) and the control detects an exhaust temperature rise 25° F greater than set point, this will be the trip point and the F.S.S. routine will activate. If set point is below 160° F (71° C) the trip point will be 185° F (85° C).

Once the F.S.S. routine is activated, water will be injected into the basket (tumbler) chamber. Anytime water is being injected into the basket (tumbler); the basket (tumbler) drive will turn the load for 1-second every 15-seconds. This process will continue for a minimum of 2 minutes. After 2 minutes has elapsed, the control will check if the temperature remained above trip point, if so water will remain on. The control will continue to check if temperature is above trip point every 30-seconds. If the water has been on for a constant 10 minutes, the water will be turned off regardless of the temperature. If the temperature has dropped below trip point, the control will turn off the water prior to 10 minutes.

SYSTEM RESET

After the microprocessor determines that the situation is under control and shuts the water being injected into the basket (tumbler) off, the microprocessor display will read "FIRE SUPPRESSION SYSTEM WAS ACTIVATED," and the horn/tone will sound until reset manually.

To reset the microprocessor once the control displays "FIRE SUPPRESSION SYSTEM WAS ACTIVATED," press the red key on the keyboard (touch pad).

NON-COIN F.S.S. SYSTEM CHECK PROCEDURE

The operation of the water solenoid valve can be tested to ensure that the water supply system and valve are functional. Before attempting system check, be sure that **ALL** water supply shutoff valves to the dryer are in the OPEN position, and the dryer **must be** in the "READY" mode where no cycle is loaded or in progress.

The procedure is as follows:

1. Press and hold the RED STOP key (while in "READY" mode and no cycle in progress).

2. Press and hold the "A" key.

3. Water valve will open and water will be dispensed into basket (tumbler) area as long as both keys are held.

IMPORTANT: This is a test function only and the keys ***should be*** held and system activated for only a second or so, otherwise water will accumulate in various places in the dryer.